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ANNUAL REPORT

OF THE

HEALTH DEPARTMENT

OF THE

CITY OF RICHMOND, VA.

FOR THE

Year Ending December 31, 1913

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ANNUAL REPORT.

REPORT OF THE CHIEF HEALTH OFFICER.

Richmond, Virginia, February 15, 1914.

To the Honorable Board of Health of the City of Richmond.

Gentlemen:

I have the honor herewith to submit for your consideration the forty-second annual report of the Health Department of the City of Richmond. This report embraces my own report as Chief Health Officer (the eighth since I have held this position), a statement of our financial transactions, tables of vital statistics, the reports of the other officers of the Health Department, and brief reports, or tables, from the City Coroner, the Assistant Coroner and the City Chemist, covering such parts of their work as have been done for the Health Department or are closely related to the work of the Health Department.

I am glad to be able to report to you another year of excellent results in every one of our lines of work. Our general death rate was the lowest since reorganization of the Health Department in July, 1906. Our death rate from acute contagious diseases as a whole was not so phenomenally low as in 1912, but was still quite low, in spite of the fact that 1913 was both a "measles year" and a "whooping cough year"—these two diseases, the most fatal of all the contagious diseases of infancy and childhood, not being as yet controllable by any means known to sanitary science. The death rate from consumption was the lowest on record for our city. The death rate from infantile diarrhea was not only the lowest on record, but was lower than I would have thought possible for Richmond a few years ago, this being highly gratifying not only on account of the immediate result itself, but also on account of the fact that this result was, in my opinion, due to the policies which we ourselves worked out along new lines. A new record was established for our milk work, the average score of all dairy farms shipping milk into Richmond during 1913 having been higher than ever before, while the general results which we have attained in this field were vouched for by the National Commission on Milk Standards, which met here in May. The number of dry closets in the city was greatly reduced, there now being just about 1,200, less than one-third of what we had three years ago, and all of these 1,200 have been reinspected and repairs ordered as indicated. For the first time on record, there was no death reported as caused by malarial fever. As a result of our observations and experiments which we have conducted, we have brought out facts which will have a great influence in bringing about more effective methods of fly-fighting and have originated a new weapon of value in campaigns against the house-fly—that greatest disseminator of disease.

The above are among our most important accomplishments during 1913. The record is one of which I feel we have every right to be proud. Each of these matters will be taken up in detail further on in this report.

General Death Rate.

The total number of deaths in Richmond during 1913 was 2,718. This is exactly the same number of deaths as in 1911 and 3 more than in 1912. This is rather a peculiar coincidence in a city of over 130,000. While the total number of deaths has thus been practically constant for the past three years, the death rate has been lower each year, as the population of Richmond, according to the official figures of the United States Bureau of Census, is increasing in the present decade at the rate of 1,377 a year. Thus the death rate from all causes (still births excluded) was 21.02 per 1,000 in 1911, 20.78 in 1912 and 20.58 in 1913*

The number of non-residents dying in Richmond is constantly increasing. If these be excluded, the number of deaths shows a decided decrease, while the death rate shows a decrease even more marked. There were 2,451 deaths in 1911, 2,425 in 1912, and 2,421 in 1913, corresponding, respectively, to death rates of 18.96, 18.56 and 18.33 per 1,000, with non-residents excluded.

The number of deaths and the death rate, each with non-residents included and excluded, are given in the following table, which covers the seven complete years which have elapsed since reorganization of the Richmond Health Department in 1906.

YEAR	NUMBER OF DEATHS			DEATH RATE PER 1000 INHABITANTS		
	Non-residents included	Non-residents only	Non-residents excluded	Non-residents included	Non-residents only	Non-residents excluded
1907	2,652	155	2,497	28.38	1.37	22.02
1908	2,486	167	2,319	21.66	1.45	20.20
1909	2,404	219	2,185	20.69	1.88	18.81
1910	2,887	331	2,556	22.57	2.59	19.98
1911	2,718	267	2,451	21.02	2.06	18.96
1912	2,715	290	2,425	20.78	2.22	18.56
1913	2,718	297	2,421	20.58	2.25	18.33

The above table shows that the crude death rate of Richmond in 1913 was the lowest of any of the years since reorganization in July, 1906. Owing to the fact that deaths among non-residents and also deaths of infants less than one day old were not included before reorganization, the death rates as published in the annual reports of the Health Department prior to 1907 are not comparable with the rates given in the above table. As the death rate for the period above given has steadily declined, and as the death rate from all important contagious diseases, including tuberculosis and infantile diarrhea, has been notably lower in the past seven years than it ever was before, it is certainly fair to assume that the general death rate of Richmond in 1913 was not only the lowest of any year given in the above table, but also lower than in any previous year of the city's existence.

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* *See footnote to Table No. 9.*

This result has been obtained in spite of the constantly increasing number of non-residents who die in Richmond. The above table shows that, with a single exception, we have had each year more non-residents dying in Richmond. The year 1910 shows 331 non-residents dying here—a figure which, fortunately, has not yet been equalled, or exceeded, by any subsequent year. We find, in consequnce of the above facts, that the death rate of our city with non-residents excluded, shows a decrease even greater than where all deaths are included. In 1913 almost 1 death in 9 was a non-resident. This proportion is steadily increasing, since the death rate among our own people is decreasing, while the number of hospitals here is rapidly growing. Richmond is becoming more and more a medical center. While this has its advantages, nevertheless it increases our *apparent* death rate.

I have repeatedly stated in these reports that the general, or crude, death rate of a city must not be used as a basis for comparing the healthfulness of cities nor the relative efficiency of their health departments. The crude death rate has, however, considerable usefulness in comparing health conditions in the same city year by year. Even here the crude death rate must not be used blindly. Many other factors enter into the problem. Chief among these, perhaps, is the fact that in every community there is a normal fluctuation in the annual death rate. Hence in studying the crude death rate of any city we cannot accurately judge of the extent to which any policies have lowered the death rate without having some idea of what the rate would have been but for such policies, yet there is no way of determining this with exactness.

There are many other things which lessen the value of the crude death rate as an index of sanitation even in the same city year by year.

In spite of all these drawbacks, it is gratifying to see the steady decline in the death rate of Richmond since the reorganization of the Health Department in 1906, as shown in the above table.

Deaths from Certain Causes.

Nothing which has been said above should be taken to mean that vital statistics have little usefulness in comparing the general healthfulness of different communities and the efficiency of their health departments, or that they do not furnish a really excellent criterion in judging the value of progressive work. But these things can be shown only by further analysis, not by crude death rates.

Especially valuable are statistics which are based on consideration of the causes of death. The following table gives the death rate from certain important causes of death in Richmond for the past seven years, 1907-1913, inclusive, that is, the seven years following the reorganization of the Richmond Health Department in July, 1906. Death rates per 100,000 of population are given in this table and not the number of deaths. This is the only method of statement which makes possible a comparison year by year, since the population of Richmond has steadily increased and was greatly added to by annexation in 1910.

Table giving death rate from certain important causes, in the City of Richmond, Virginia, for the years 1907-1913, inclusive; the average annual death rate from these causes for the two-year period, 1907-1908, and the five-year period, 1909-1913, inclusive; and a comparison of the death rate for these two periods.

CAUSE OF DEATH	DEATH RATE PER 100,000							ANNUAL AVERAGE		Decrease or Increase in Average Annual Death Rate of 1907-1908 Compared with 1909-1913
	1907	1908	1909	1910	1911	1912	1913	1907 to 1908	1909 to 1913	
Typhoid fever	41.4	49.7	24.1	21.9	17.8	16.8	20.4	45.6	20.2	25.4
Malarial fever	28.2	6.1	7.7	4.7	.8	2.3	0.0	17.2	3.1	14.1
Measles	30.9	5.2	.9	22.7	9.3	.8	18.9	18.0	10.5	7.5
Scarlet fever	0.0	.9	.9	0.0	2.3	.8	3.8	.5	1.6	* 1.1
Whooping cough	2.6	28.7	11.2	36.7	39.5	3.8	12.9	15.7	20.8	* 5.1
Diphtheria	14.1	3.5	7.7	10.2	10.1	6.1	6.1	8.8	8.0	.8
Dysentery	25.6	15.7	11.2	12.5	24.7	14.5	15.9	20.7	15.8	4.9
Influenza	41.4	33.1	12.9	25.8	20.1	18.1	22.7	37.3	19.9	17.4
Pneumonia (lobar or unqualified)	200.2	132.4	102.4	115.7	88.9	86.5	77.2	166.3	94.1	72.2
Broncho-pneumonia	61.8	49.7	43.9	77.4	64.2	79.6	71.2	55.8	67.3	*11.5
All diseases of the respiratory system (consumption not included)	401.2	294.5	249.6	283.8	225.9	244.9	233.2	347.8	247.4	100.4
Consumption	229.3	194.3	208.3	223.6	207.4	206.6	162.1	211.8	201.6	10.2
Other tubercular diseases	41.4	30.5	44.8	30.5	42.5	39.0	45.4	36.0	40.4	* 4.4
Cancer (of all organs)	70.5	73.2	79.2	85.2	87.4	91.8	87.1	71.8	86.1	* 14.3
Apoplexy	149.0	122.8	135.2	150.1	147.7	152.3	140.9	135.9	145.2	* 9.3
Organic heart disease	153.4	172.5	152.4	174.3	167.7	218.1	211.3	163.0	184.8	* 21.8
Bright's disease	112.9	139.4	133.4	181.0	161.7	176.0	167.4	126.2	163.9	* 37.7
Diarrhea (under two years)	142.0	122.0	126.5	132.1	151.6	101.0	84.8	132.0	119.2	12.8
Diarrhea (over two years)	49.4	32.2	32.7	26.6	22.4	25.2	31.0	40.8	27.6	13.2
Congenital debility	107.6	118.2	124.0	110.2	98.2	118.6	121.2	110.4	114.4	4.0
Suicide	13.2	11.3	7.7	9.4	20.1	13.8	19.7	12.3	14.1	* 1.8
Legal electrocution	†	† 1.7	14.6	11.7	2.3	5.4	10.6	† .9	8.9	* 8.0
Other violent deaths (nonsuicidal)	104.9	88.9	109.3	122.0	113.7	124.0	114.4	96.9	116.7	* 19.8
Cause of death ill-defined or unknown	91.7	71.5	73.8	83.0	44.1	32.1	23.5	81.6	51.3	30.3
Total deaths, all causes:										
Nonresidents included	2,338	2,166	2,069	2,257	2,102	2,078	2,058	2,252	2,113	139
Nonresidents excluded	2,202	2,020	1,881	1,998	1,896	1,856	1,833	2,111	1,893	218

*Increase.

†The first legal electrocution, under the Act of 1908 (by which all electrocutions, for crime committed in any part of the State, are conducted in Richmond), was in October, 1908.

All death rates in the above table are calculated from the official census of 1910, and the postcensal estimate of the United States Bureau of the Census for intercensal years. (See footnote to Table No. 9.)

Study of the above table shows that, with remarkably few exceptions, *the death rate from those diseases which are regarded as preventable*, that is, the acute contagious and infectious diseases, tuberculosis and infantile diarrhea, *shows great decline*, while, with equally few exceptions, *the death rate from non-preventable diseases has decidedly increased.*

Deaths From Contagious Diseases.

No single statement, no small group of figures, can ever truly be used to show the successful work of a health department. The death rate from acute contagious diseases is, however the nearest approach which we have for this purpose, provided, of course, that the figures are properly interpreted. The chief weakness in this method lies in the fact that most contagious diseases vary normally in their prevalence and in their fatality in any community from year to year. In consequence of this, it may happen that a season of normally low mortality from two or three of these diseases may fall together in a given year, thus bringing about an apparently great lessening of the mortality from the whole group without this being in the slighest degree due to any work of the health department. On the other hand, exactly the opposite may occur, thereby giving a death rate from this group of diseases as a whole which is higher than it has been in a number of years, in spite of really excellent work on the part of the health department.

In spite of these difficulties, and others of a like kind, a great deal can be learned by comparing the death rate from acute contagious and infectious diseases in any community with the death rate from these diseases in other communities and with the death rate from these diseases in the same community in former years.

Special care must always be taken in connection with any comparison of death rates in different communities. Many diseases have a more or less definite geographical distribution. In a general way it may be asserted that Northern cities will naturally, other things being equal, have a death rate higher than Southern cities in connection with diseases which are commonly recognized as diseases of the colder parts of the year, and vice versa. For example, Southern cities naturally have a much higher death rate from typhoid fever and infantile diarrhea than have Northern cities, assuming, of course, that other conditions are not essentially different, and, especially, assuming equally efficient health departments. On the other hand, scarlet fever and diphtheria have higher death rates in Northern cities than in Southern cities with equally good health departments.

In my last (1912) annual report I gave a table showing the death rate from typhoid fever, malarial fever, measles, scarlet fever, whooping cough and diphtheria in Richmond in 1912, and comparing this with the rate for each of these diseases in the "registration area" of the United States and in "cities in non-registration States" in 1909, this being the last year for which these figures were at hand. Since then, the death rate from these causes for the year 1912 have been published, so that we are now able to make this comparison for the year 1912. For reasons which will be discussed later, I will also give for comparison the death rate from these causes in Richmond for 1913.

CAUSE OF DEATH	DEATH RATE PER 100,000			
	REGISTRATION AREA, 1912	RICHMOND		
		1912	1913	Average
Typhoid fever................	16.5	16.8	20.4	18.6
Malarial fever................	3.1	2.3	0.0	1.2
Measles	7.0	.8	18.9	9.8
Scarlet fever..................	6.7	.8	3.8	2.3
Whooping cough.............	9.3	3.8	12.9	8.4
Diphtheria	18.2	6.1	6.1	6.1
All six causes...........	60.8	30.6	62.1	46.4

The table just given brings out some very interesting points. For example, comparing the death rate from six typical preventable diseases in Richmond and in the registration area in 1912, we find that in only one of these, typhoid fever, did our Richmond rate exceed the rate for the registration area, and this excess was only .3 per 100.000, although we include every death occurring in Richmond. If we exclude those deaths which occurred among cases contracted outside of Richmond the decedents moreover not being residents of Richmond, our death rate from typhoid fever in Richmond in 1912 was 13 8, which is well below the rate for the registration area. Again, the registration area is almost entirely made up of sections of the United States in which the death rate from typhoid fever should be far lower than it is in the South. Even with these two handicaps, our death rate from typhoid fever in Richmond in 1912 was very slightly in excess of the rate for the entire registration area.

Our death rate from the remaining five causes was in every instance lower in 1912 than the rate for the registration area, and for the six causes combined. our rate was only 30.6. against 60.8 for the registration area, that is, very little over one-half.

In 1913, we had high death rates from both measles and whooping cough, 1913 being distinctly a measles and a whooping cough year. Even at that our death rate from these six diseases combined was in 1913 but little higher than for the registration area in 1912, the figures for the registration area for 1913 not yet being available. while our average rate for 1912 and 1913 combined was only 46.4 per 100,000. against the 1912 rate of 62.1 for the registration area. This is a record of which we have every right to feel proud.

Civil Service in the Health Department.

Several years ago the Board of Health adopted a regular blank form to be filled out by every person making application for any position in the Health Department. The mere fact of requiring such a written application has worked out well in practice, automatically weeding out a considerable number of the unfit. It is one thing for a man who knows he is not suited for a given position to make personal application for it, but quite another thing to make a written statement regarding his previous history and qualifications. In many other ways this form of application has worked out well.

A footnote to this application blank states that the Board of Health reserves the right to hold a written examination for all the candidates, but this has never been done until the past year. Our first examination was held in connection with filling the vacancy created by the resignation of Mr. R. B. Palmer, our clerk, who left the Department after one year's service. There were twenty applicants for this position, but only twelve appeared for examination. The papers submitted showed that two of the applicants were clearly in the lead. I reported this to the Board of Health, whereupon they elected Mr. F. W. Robins. His work has proved the value of the method employed in determining the relative merits of the candidates.

Medical Inspector.

The second examination was held in March. This was taken by ten young physicians who were applying for the position of Medical Inspector, which was about to be made vacant by the resignation of Dr. C. C. Hudson. Dr. Hudson left us in order to became Health Officer of the city of Danville. Virginia. I may at this point state that we greatly regretted losing him. He had been with us since November, 1910. His work while with the Departmant was most satisfactory, especially after the first few months with us, during which time he was familiarizing himself with the duties of his office.

This examination resulted in my recommending to the Board of Health the two men—Dr. B. E. Summers and Dr. T. V. Goode—who stood best, and I stated that either of these two would, in my opinion, make a good officer. The Board of Health elected Dr. T. V. Goode, who entered upon the duties of his office on April 1st. After only two months, however, Dr. Goode was forced, on account of an attack of illness, to offer his resignation. The Board of Health then elected Dr. B. E. Summers. He has been Medical Inspector since June 1st.

During the short time that Dr. Goode was with us he learned rapidly and was doing excellent work when he resigned. Dr. B. E. Summers, the present incumbent, has "made good." He quickly learned the duties of his office and has been zealous in their execution. His work has been painstaking and efficient and suffers nothing by comparison with that of the most excellent line of medical inspectors who preceded him.

A third examination was held during 1913, this being for the purpose of selecting a nurse to act as substitute during the prolonged illness of one of our regular staff of nurses. Here, too, the method worked well.

Judging by these three examinations, I believe we are enabled by this means to select the persons best fitted for our various needs. Our method has, I believe, certain advantages over absolutely strict civil service, in that the Board of Health is free to select whom they will. Thus far they have elected the applicant who stood highest or next to highest on examination. and in each instance, the choice has proved to be a wise one. On the other hand, it is always possible that the applicant standing best on examination may either lack some very essential qualification or possess some objectionable handicap. If such a case arises our method does not obligate the Board to elect such person. The examination weeds out a large proportion of utterly unsuitable material and leaves the Board to choose from those remaining the person who seems to them best qualified in other ways.

One of the best features of our method is that it helps in keeping the Health Department divorced from politics. The political influence which any candidate might bring to bear is practically done away with. When elections are held with no systematic attempt to ascertain the relative qualifications of the candidates, more persons are always disappointed than pleased. but where the election is based on merit, so far as this can possibly be determined in advance, no one is hurt because a candidate highly endorsed by him failed to secure the appointment. He has done his part and if his man fails the prestige of his sponsor does not suffer.

I have gone into this discussion of the modified form of civil service which obtains in the Richmond Health Department somewhat at length because of the number of inquiries which I have received as to its workings.

Typhoid Fever.

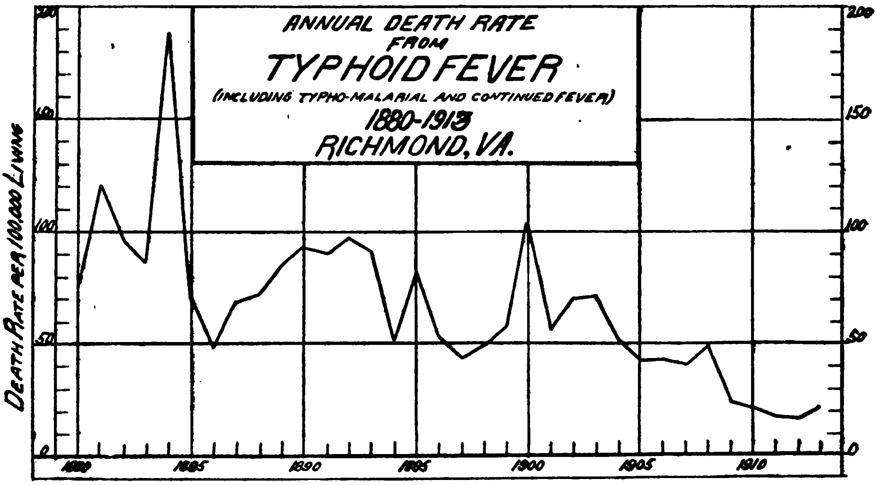
There were 233 cases of typhoid fever reported to the Health Department during 1913, with 27 deaths, equivalent to a death rate of 20.4 per 100,000 population. This was the lowest death rate which we have ever had from this disease in Richmond except for the two years immediately preceding—1911 and 1912. It gives us the fifth consecutive year with a death rate around 20 per 100,000, in place of the old rate, which averaged 77.8 and which got down into the 40's only four times in twenty-six years. The average for the past five years has been 20.2.

The following table gives the number of deaths from typhoid fever and the death rate per 100,000 population from this disease for the past 34 years:

Table Showing Annnal Number of Deaths from Typhoid Fever (Including "Typho-Malarial Fever" and "Continued Fever") and the Annual Death-Rate per 100,000, Richmond, Virginia, 1880-1913.

YEAR	DEATHS FROM TYPHOID FEVER		YEAR	DEATHS FROM TYPHOID FEVER	
	Number of Deaths	Rate per 100,000		Number of Deaths	Rate per 100,000
1880.............	49	77.0	1895.............	69	82.9
1881.............	79	120.9	1896.............	45	53.8
1882.............	64	95.4	1897.............	37	44.1
1883.............	59	85.6	1898.............	42	49.9
1884.............	133	188.1	1899.............	49	57.9
1885	51	70.4	1900.............	88	103.3
1886.............	36	48.5	1901.............	49	56.6
1887.............	52	68.4	1902.............	63	71.6
1888.............	56	72.0	1903.............	64	71.7
1889	68	85.4	1904.............	47	51.8
1890.............	76	93.4	1905.............	40	43.5
1891.............	74	90.6	1906.............	41	43.9
1892.............	80	97.4	1907.............	47	41.4
1893.	75	91.0	1908.............	57	49.7
1894.............	42	50.7	1909.............	28	24.1
			1910.............	28	21.9
			1911.............	23	17.8
			1912.............	22	16.8
			1913.............	27	20.4

The death rates given in the above table are shown graphically in the following diagram:



The figures in the above table are combined in five-year periods in the following table:

PERIOD	Average Annual Death Rate from Typhoid Fever per 100,000 population
1880–1884 (5 years)	113.4
1885–1889 (5 years)	68.9
1890–1894 (5 years)	84.6
1895–1899 (5 years)	57.7
1900–1904 (5 years)	71.0
1905-1909 (5 years)	40.5
1910–1913 (4 years)	19.2
1909-1913 (last 5 years)	20.2

Table Giving a Brief History of the Twenty-seven (27) *Deaths from Typhoid Fever in the City of Richmond, Virginia, During* 1913, *with Special Reference to* (1) *Where Disease Was Contracted,* (2) *Whether Resident or Nonresident of Richmond, and* (3) *Whether Diagnosis Was Positive or Doubtful.*

CASES CONTRACTED IN CITY.

3. (Resident) 18-1149, white male, 2 yrs., died May 29.

5. (Resident) 34-1160, colored female, 22 yrs., died June 1, ill 16 days.

6. (*Resident*) 54-1175, *white female,* 9 *yrs., died June* 2. *"Blue baby." All life had attacks of endocarditis every* 4-6 *wks. This attack so regarded, but after death changed to typhoid, solely because temperature higher and outcome fatal. Almost certainly not typhoid.*

7. (*Resident*) 44½-1176, *colored female,* 35 *yrs., died June* 2. *Ill* 1 *yr., in bed* 3-4 *wks. Dept. asked, and diagnosed tubercular meningitis. Widal negative. After death doctor thought case probably paratyphoid.*

8. (Resident) 65-1291, colored male, 24 yrs., died June 16.

11. (Nonresident) 87-1429, white female, 17 yrs., died June 29.

12. (Resident) 83-1444, white female, 58 yrs., died July 1.

13. (Resident) 62-1570, colored female, 21 yrs., died July 17.

14. (Resident) 96-1645, colored male, 28 yrs., died July 29, ill 22 days.

17. (*Resident*) 94-1845, *white female,* 16 *yrs., died Aug.* 26. *Took to bed July* 4; *had* 8½ *months baby Aug.* 16, *which lived only* 21 *days. Death of mother apparently due to starvation; temp. normal* 1 *wk. before death.*

20. (*Resident*) 185-1938, *white male,* 50 *yrs., died Sept.* 9. *Ill* 8 *days. Delirious from start, apparently brain lesion. Certificate stated "typhoid meningitis." No tests and scant clinical evidence to sustain this.*

CASES CONTRACTED OUT OF CITY.

1. (Nonresident) 210 (series of 1912) -86, white male, 27 yrs., died Jan. 10, after illness of 37 days. Brought in from North Carolina.

2. (Resident) 4-368, white male, 38 yrs., died Feb. 16. Out of city Dec. 14-20; taken ill Dec. 29. Carried as 75 per cent probability contracted out of city.

4. (Nonresident) 33-1159, white male, 28 yrs., died May 31, 15 days after illness. Brought in from Henrico County.

9. (*Resident*) 74-1301, *white female,* 16 *yrs., died June* 17. *Out of city June* 1-3, *typhoid case where visiting. Taken ill June* 14 *and died on* 17. *Seen only twice by physician. Death sudden. No typhoid symptoms. Above contact only grounds for diagnosis.*

10. (Nonresident) 63-1302, colored female, 17 yrs., died June 17. Brought in from Riverside Road.

15. (Nonresident) 136-1746, white male, 51 yrs., died Aug. 12. Brought to a Richmond hospital from Ivor on July 31.

16. (Nonresident) 157-1789, white male, 28 yrs., died Aug. 18. Brought from outside of city.

18. (Nonresident) 177-1884, white male, 21 yrs., died Sept. 1. Brought in from Swansboro.

19. (Nonresident) 174-1893, white male, 35 yrs., died Sept. 3. Came from Georgia ill and was taken at once to City Home.

21. (Resident) 197-2040, white female, 15 yrs., died Sept. 25. Out of city all summer; returned after taken ill.

CASES CONTRACTED IN CITY.

23. *(Resident)* 208-2076, *white female, 40 yrs., died Sept. 30. Pain in rt. side for 6 mos.; worse on Sept. 28. Two days later semi-conscious; taken to hospital, died in 2 hrs. Clearly abdominal condition other than typhoid.*

25. *(Resident)* 232-2427, *colored female, 24 yrs., died Nov. 21. Undiagnosed during 2 wks. illness. Blood in stool just before death suggested to doctor probability of typhoid, but this very doubtful.*

26. (Resident) 237-2614, white female, 24 yrs., died Dec. 20; ill 19 days. Diagnosis 3 days before death; no laboratory tests.

27. *(Resident)* 242-2706 *white male, 39 yrs., died Dec. 31; ill 11 days. Considered grip and pneumonia until day of death.*

CASES CONTRACTED OUT OF CITY.

22. (Nonresident) 200-2056, colored female, 28 yrs., died Sept. 27. Contracted typhoid while nursing mother and sister in Swansboro.

24. *(Nonresident)* 225-2256, *colored male, 23 yrs., died Oct. 28. Ill 6 mos., bad cough, severe pains head and back, steady loss of weight. Took to bed Oct. 17. Unconscious on admission to City Home on Oct. 24. No diagnosis during life. Brought in from Chesterfield County.*

(Explanatory Note.) The first figure preceding each case in the above table is the consecutive number of each of the 27 fatal cases of typhoid fever in Richmond during 1913, according to the date of death. The first part of the second (hyphenated) figure refers to the serial number of each case in the records which the Richmond Health Department keeps of all cases of typhoid fever in the city, while the second part of this figure is the registered number of the certificate of death in each case. These latter figures are given for our own use only, enabling us to refer immediately to the full records of these cases and to the certificates of death, if it is desired to make further studies of these cases at any time. Cases printed in italics are those in which the diagnosis of typhoid fever was more or less doubtful. Words in quotation are taken from statements made by the attending physician on the death certificate. Decedents who had been in Richmond six months or less are classified as nonresidents

The deaths from typhoid fever which occurred in Richmond during 1913, the history of which is given in the above table, may be classified as follows:

Table Giving Summary of Typhoid Deaths in Richmond During 1913, *Classified According to* (1) *Where Disease Was Contracted,* (2) *Whether Resident or Nonresident of Richmond, and* (3) *Whether Diagnosis Was Positive or Doubtful.*

	CONTRACTED IN RICHMOND			CONTRACTED OUT OF RICHMOND			ALL CASES		
	Resident	Nonresident	Total	Resident	Nonresident	Total	Resident	Nonresident	Total
All cases	14	1	15	3	9	12	17	10	27
Diagnosis positive	7	1	8	2	8	10	9	9	18
Diagnosis doubtful	7	0	7	1	1	2	8	1	9

While, of course, the death rate from typhoid fever in Richmond in 1913 must be given as 20.4 per 100,000, which is calculated from the 27 death certificates on which typhoid fever is given as the cause of death, regardless of where the disease was contracted or whether death was really due to this disease, it is nevertheless interesting to reduce some of the above figures to rates per 100,000.

	Number of Deaths	Death Rate per 100,000
All deaths from typhoid fever in Richmond during 1913	27	20.4
Excluding non-residents who contracted the disease outside of Richmond	18	13.6
Excluding all cases contracted outside of Richmond	15	11.4
Excluding all cases contracted outside of Richmond and all cases contracted in Richmond in which the diagnosis was doubtful	8	6.1

According to the accepted rules of statistical practice we have to charge ourselves with every death which occurs in our city, without reference to where the disease was contracted or whether the decedent was a resident of Richmond. The 27 deaths from typhoid fever which occurred here in 1913 give us a death rate of 20.4 from this disease. But, although this rate of 20.4 per 100,000 is the only rate which will be officially accepted. we may well call attention to the fact that, of the 27 deaths which occurred here, 9, or exactly one-third, were among nonresidents who contracted typhoid fever outside of Richmond. It is self-evident that no possible work of the Richmond Health Department could have the slightest effect on this group of deaths. Eliminating these 9 deaths would leave us 18 deaths, equivalent to a death rate of 13.6 per 100,000. But besides these deaths there were 3 residents of Richmond who died from typhoid fever contracted elsewhere.

If we deduct these deaths there remains only 15, giving a death rate of 11.4 per 100,000. Finally, in 7 of the 15 fatal cases of typhoid fever just given, the diagnosis was exceedingly doubtful, thus leaving only 8 deaths from typhoid fever in Richmond last year among cases contracted in our city and known to have been really due to that disease. This gives a death rate of only 6.1 per 100,000.

Water-Borne Outbreaks in 1913.

I have so frequently given the history of the work which has been done by the Richmond Health Department in connection with the study of the causes of typhoid fever in Richmond that I will not repeat this in the present report, except to say that early in 1908 we reached the conclusion that our water supply was not a prominent factor in this connection. The same is true of our milk supply, which has not been responsible for a single case of typhoid fever since we began to study all cases carefully, in 1907. We reached the conclusion that the chief cause of typhoid fever in Richmond was spread from local foci of infection and that, in a large proportion of cases insanitary privies were the direct agency by which this was brought about. Attacking the problem along this line and getting all privies in the best condition practicable, early in 1909, immediate results were obtained, the death rate from typhoid fever at once falling to 24.1 per 100,000, while the lowest figure in the preceding 29 years had been 41.4. Since then the average rate has been 20.2.

Although our water supply is believed not to have been the chief cause of our typhoid fever, or even a very prominent cause, we nevertheless were able to recognize a water-borne outbreak of typhoid fever (74 cases) in January and February, 1908, and a smaller one (15 cases) in February, 1909. In the fall of 1909 our water purification system went into use and from that time until the past year we had no reason to hold our water supply responsible for even a single case of typhoid fever.

On April 17, 1913, I was informed by the Superintendent of Water Works that, owing to an accident to a valve at the end of the suction pipe at the South Richmond pumping station and to the fact that high water made it impossible to reach and repair this valve, raw water had been going to the people in South Richmond since the afternoon before. I at once insisted that we should take steps to minimize the harm which I feared would occur. On visiting the plant I outlined how a very simple construction would enable us to add chloride of lime to the water until the valve could be reached and the filters be again put in operation. This was done in a few hours. I went at once to the offices of both our afternoon papers and had them print very prominently an account of what had occurred and advise the people of South Richmond to boil all drinking water until the reappearance of clear water in their fixtures showed them that the filters were again in operation.

This, of course, put an end to any trouble, but we waited anxiously to see whether damage had been done during the twenty-four hours during which untreated, raw water had been going to the people. Seven cases developed, grouped around the fourteenth day after the accident above mentioned, and one of these cases proved fatal. This should never have occurred. Had I been informed at once of the accident which made it impossible to give filtered water to South Richmond at a time when the high water showed that the countryside had been heavily scoured, I would have advocated shutting down the pumps until provision could be made for adding chloride of lime to the water, or, if this had proved impossible, owing to the small storage capacity on the south side of the river, I would have advised that the pumps be shut down as long as possible and that as many men as could be secured from the Water Department, the Health Department and the Police Department be sent from house to house to tell the people what had happened and to advise them to boil all water during the next day or two.

In June we began to have very many more cases of typhoid fever on the north side of the river than we had been having for a number of years at that season, and, contrary to the experience of previous years, a considerable proportion of these cases were in the best sections of the city. As the cases increased in number and as the careful study which we gave to all cases failed to show any other common factor, we regarded their geographical distribution as sufficient to justify our belief that our water supply was the cause of a large proportion of these cases. I at once communicated this opinion to the Administrative Board and strongly urged that provision be made as promptly as possible for adding chloride of lime to the water distributed on the north side of the river. Dr. A. W. Freeman, formerly Medical Inspector of the Richmond Health Department and now Assistant Health Commissioner of the State of Virginia, concurred with me in my opinion and in my recommendation.

There was some delay in getting the chlorine plant installed, but it was done after a couple of weeks. On making inquiry as to how infected water could have been delivered to the people in spite of the purification system, it was found that one of the coagulating basins had been closed for 22 days during cleaning, instead of the usual two or three days and that, of course, the water had been run steadily through the other basin during all this time. instead of being treated by the fill-and-draw method which is followed when both coagulating basins are in use. The time at which this occurred was found to be exactly what we believed it must have been by counting back from the time when our greatest number of cases of typhoid fever had developed in the better sections of the city. As we always have in June a number of cases developing from the usual summer causes, it is impossible to say just how many cases we could properly attribute to water, but there is no doubt whatsoever that a considerable number were so caused

Importance of Pure Water.

The occurrence of two small water-borne outbreaks of typhoid fever in Richmond last year shows that the utmost care must be taken to avoid having such accidents in the future and that, furthermore, all water going to the people should be treated with chlorine as a finishing process. The filtration plant on the south side of the river and the storage and coagulation basins on the north side do excellent work in purifying our water supply, but it is getting to be the practice everywhere to apply chlorine to the water even after it has been handled by the highest type of filters. The treatment is so simple, so cheap and so free from every possible objection, if properly carried out, that it is inexcusable to neglect it.

The plant now in use at the settling basins for applying chloride of lime to the water as it leaves the coagulating and sedimentation basins has done excellent work. It was constructed with commendable promptness under the direction of Mr. William Lawton, Assistant Superintendent of the City Water Works, assisted by Mr. Richard Messer, Engineer to the State Board of Health. But this plant was never intended to be a permanent structure. It does the work expected of it, but it should now be replaced by a permanent plant for adding liquid chlorine. This type of plant is more costly to install than is a plant for the addition of chloride of lime, but the difference in operating cost is all in favor of the liquid chlorine plant, beside which less chlorine is added by such a plant than by the chloride of lime method; it is neater in appearance, free from the strong, disagreeable odor in the building in which it is located (which inevitably suggests to visitors that the treated water must be objectionable, although the amount which is added per gallon is so minute that this is not at all the case), and, indeed, in every way the liquid chlorine plant is to be preferred. This whole question has been thoroughly investigated by Mr. Lawton, and his report to the Administrative Board was a clear, exhaustive analysis of the situation. He recommended unqualifiedly the installation of a liquid chlorine plant and urged its prompt construction. It is to be hoped that this recommendation will be followed in the near future.

Further Reduction of Typhoid Fever.

Analysis of the typhoid fever tables brings out a number of highly interesting points. The table showing where the fatal cases were contracted and whether the diagnosis in these cases was positive, or doubtful, has now been published four years. In these years (1910-1913, inclusive), there have been exactly 100 deaths from typhoid fever in Richmond. Study of these cases, along with the mass of information concerning typhoid fever in Richmond, which we have accumulated in the past seven years, throws light on the question of effecting a further reduction in the death rate from this disease. So important is this question, however, that I think it best not to incorporate this discussion in my annual report, where such things are little read, but to make this the subject of a special paper to be written later on.

The average annual death rate from typhoid fever in Richmond for the past five years has, as stated farther back, been 20.2 per 100.000, against an average rate of 77.8 from 1880 to 1905, inclusive, a period of 26 years. But this is still not enough. I am certain that this rate can be again lowered. To do so is going to require hard work and it is also going to require cooperation on the part of others. I purpose following this up as vigorously as possible, and I have not the slightest doubt as to getting results.

Malarial Fever.

The year 1913 is the first on record with no death reported as due to malaria. Whether or not it is the first year during which no death was actually due to this disease is another question and one which cannot be answered. In order to understand the situation, the figures for the past ten years are given.

YEAR	DEATHS FROM MALARIAL FEVER	
	No. of Deaths	Death Rate per 100,000
1904	17	18.8
1905	28	30.4
1906	14	15.0
1907	32	28.2
1908	7	6.1
1909	9	7.7
1910	6	4.7
1911	1	0.8
1912	3	2.3
1913	0	0.0
Annual average 1904-07	22.8	23.1
Annual average 1908-13	4.3	3.5

The above table shows a tremendous reduction in the death rate from malarial fever in Richmond during the past six years. The average number of deaths per annum during the first four years covered in the table was 22.8, equivalent to a death rate of 23.1 per 100,000, while during the past six years these figures were 4 3 and 3.5, respectively. For the past three years there has been an average of only 1.3 deaths a year from malaria, giving a death rate of 1.0 per 100,000.

No special knowledge of either vital statistics or the science of sanitation is needed to enable any one to conclude from the above figures that there has been at work during the past six years some factor, or factors, which were not operative during the previous years. As a matter of fact, this reduction of 85 per cent. in the apparent death rate from malarial fever in Richmond has been due to two distinct causes—(1) an actual reduction, brought about by educational work and by efforts to control mosquito breeding, and (2) by insisting that "malaria" shall not be used as a convenient term on death certificates when the actual cause was either unknown or likely to make the collection of small life insurance policies difficult.

As a result of the grading and sewering of streets, done by the Engineering Department, hundreds of excellent breeding places for mosquitoes have been done away with, and the educational efforts of the Health Department, as well as the orders to abate nuisances on private property, have served to cut down most decidedly the number of mosquitoes. Since, so far as we know, malarial fever is invariably due to mosquitoes, all this has unquestionably lessened the prevalence of malaria. Since, however, the types of malarial fever which can be contracted in our climate are very seldom fatal, reduction in the number of cases of this disease and reduction in the number of deaths which it causes are two very distinct matters. I am, therefore, inclined to believe that the greater part of the reduction in the reported death rate from malaria is apparent rather than real.

The chief factor in the very great reduction in the death rate from malaria is undoubtedly due to the persistent efforts which have been made by the Health Department to secure more accurate statements of the causes of death. In several previous reports I have gone into this phase of the question at considerable length. Reference to the 32 certificates of death in 1907 in which malaria was given as the cause of death showed that 11 were signed by a single practitioner, while 22 of them, or over two-thirds of all, were signed by this physician and two others. That these three physicians should have lost 22 patients in one year from malaria while the remaining two hundred physicians in Richmond should have lost only 11 was so preposterous that even these three men had to admit that something was wrong, especially when, in reply to my inquiry, eight of our leading practitioners informed me that the only death which any one of them could attribute to malarial fever in the course of years of practice was a case which had been contracted in a state to the south of us.

I began in 1908 to make careful inquiry whenever a certificate was received which gave malaria as the cause of death. The death rate from this disease took an immediate slump. Even then the reported number of deaths attributed to this disease remained too great. For the past three years, however, the returns have probably been correct, there having been but four deaths attributed to malaria, while last year (1913) this disease was not given as the cause of death in a single instance.

I am certain that this work has been of great value to Richmond. Inquiry into the healthfulness of a city is now very commonly made by men who are considering the locating of important industries. A reputation for being "malarious" does not attract large enterprises. Richmond with a death rate of 1.0 per annum, the average for the past three years, is far more likely to attract business than Richmond with a death rate of 23.1, the average from 1904 to 1907, inclusive. This is beyond doubt a valuable financial asset to our city.

For the benefit of those who have not seen previous annual reports of the Richmond Health Department, I will state again that few, if any, of the deaths which in former years were wrongly attributed to malaria were actually due to typhoid fever, since typhoid fever has declined steadily along with malaria fever. Most of the deaths were (for reasons which I have many times stated) called malaria when actually due to tuberculosis, and sometimes to obscure suppurative conditions of one kind or another.

All of this naturally raises the question of how reliable our vital statistics are in the United States. The cause of death is, of course, given in each instance by the attending physician, or by the coroner. Our statistics cannot collectively be more reliable than are the individual death certificates of which they are made up. When it lay in the power of three physicians to change utterly our apparent death rate from malarial fever in 1907, it is most likely that many a city is credited with a high death rate from other causes simply because a small number of physicians have some favorite disease which they assign as the cause of death in every instance in which their more or less slipshod methods of diagnosis have failed to reveal true cause.

Diphtheria.

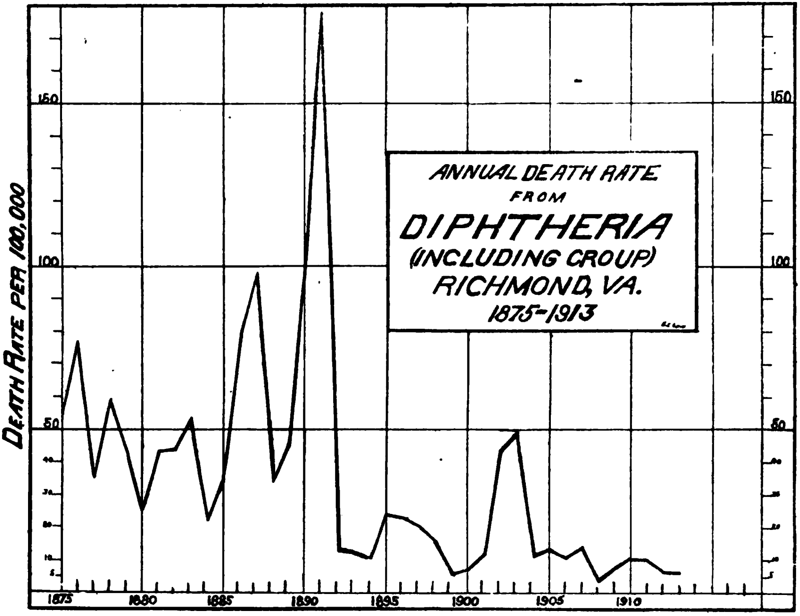
There were eight deaths from diphtheria during 1913, giving a death rate of 6.1 per 100,000 population. The number of deaths was the same as in 1912, as was also the death rate per 100,000 when carried to only one decimal place. The increase in population, with the number of deaths remaining the same gave, of course, a slightly lower rate.

The following table gives the number of deaths from diphtheria and the death rate per 100,000 inhabitants for the past 39 years.

Table Showing the Annual Number of Deaths from Diphtheria (including Croup), and the Annual Death Rate per 100,000 *in the City of Richmond, Virginia, from* 1875 *to* 1913.

YEAR	DEATHS FROM DIPHTHERIA		YEAR	DEATHS FROM DIPHTHERIA	
	Number of Deaths	Death Rate per 100,000		Number of Deaths	Death Rate per 100,000
1875	31	54.1	1895	20	24.0
1876	45	76.8	1896	9	22.7
1877	21	35.1	1897	17	20.2
1878	36	58.9	1898	13	15.4
1879	27	43.3	1899	5	5.9
1880	16	25.2	1900	6	7.0
1881	28	42.8	1901	10	11.6
1882	29	43.2	1902	38	43.2
1883	37	53.7	1903	44	49.3
1884	15	21.2	1904	10	11.0
1885	25	34.5	1905	12	13.0
1886	59	79.4	1906	10	10.7
1887	74	97.3	1907	16	14.1
1888	26	33.4	1908	4	3.5
1889	35	44.0	1909	9	7.7
1890	79	97.0	1910	13	10.2
1891	145	177.4	1911	13	10.1
1892	10	12.2	1912	8	6.1
1893	10	12.1	1913	8	6.1
1894	8	9.7			

The death rates given in the above table are shown graphically in the following diagram:



The average annual death rate from diphtheria for the entire period of 39 years was 34.4 per 100,000. The diagram above shown brings out clearly that not only has the death rate from diphtheria been greatly lowered in recent years, but the curve in recent years has been free from the tremendous fluctuations of former years. The lowering of the death rate does not correspond exactly with the reorganization of the Richmond Health Department in 1906. This fact does not at all weaken the conclusion that the more vigorous policies of the Department since reorganization have been the chief factor in the lessening of the death rate from diphtheria. This is plainly shown by the following considerations:

Prior to 1904 there were two periods, of three years each, during which the death rate from diphtheria was low. The first of these was 1892-1894, inclusive; the second was 1899-1901, inclusive. The average annual death rate for the first of these two periods was 11.3 and for the second it was 8.2. In each instance, however, the rate again went up.

The average annual death rate from diphtheria from 1904-1906, inclusive (three years), was 11.6 per 100.000. As the policies of the reorganized Department did not go fully into effect immediately after the reorganization, in July, we will assume that the low rate in this three-year period was uninfluenced by these policies. By analogy, then, it seems justifiable to assume that, but for the introduction of some new factor, the death rate from diphtheria would have gone up again after this short period of low mortality, just as it had done on two previous occasions. As a matter of fact, the death rate, so far from going up again after 1906, has been held down to a still lower level. In 1907 there was a slight rise. Conditions were very threatening during the last three months of that year, and these were met by very vigorous policies. There is not the slightest doubt that many lives were thereby saved and that, but for this, the death rate from diphtheria in 1907 would have gone up very sharply, just as it did in 1895 and in 1902. Since then, the present policies have been always firmly followed, and the results speak for themselves. The average annual death rate from diphtheria for the seven full years following the reorganization of the Department (1907-1913, inclusive) has been only 8.3 per 100,000. There seems to be no room for doubting that this has been due directly to the work done by the Health Department.

Even if the figures were not conclusive, it would not be difficult to show that many lives have been saved by this work. Every year antitoxin is given in scores of cases which but for this would have to go without it. The curative value of this remedy is no longer open to doubt. The work of the laboratory has contributed its part in the general result. Diagnostic cultures have meant much in getting more vigorous treatment, while quarantine based on cultures and not on any arbitrary time limit has been more effective. Again, by means of cultures carrier cases have been recognized and further harm from this source limited. Finally, the furnishing of free and skillful intubation in laryngeal cases has saved dozens of lives beyond any possibility of doubt. All these factors taken together make it plain that the low death rate from diphtheria in Richmond in recent years is the direct result of the work done by the Health Department.

Scarlet Fever.

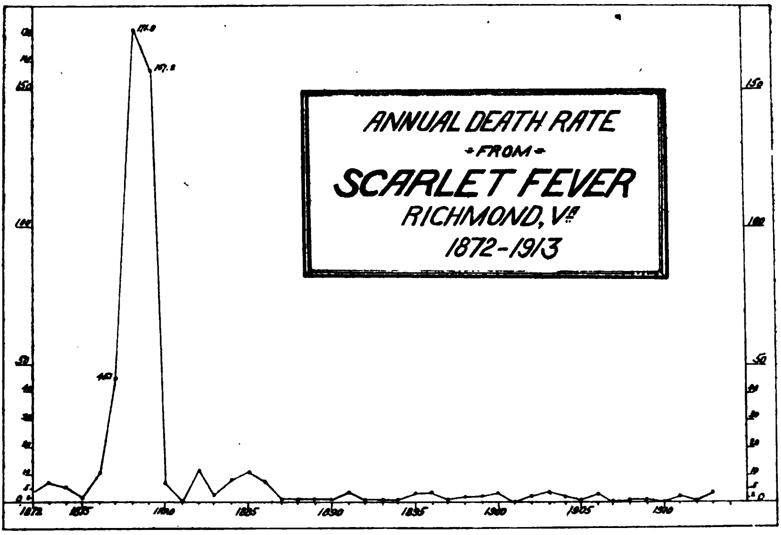
There were 266 cases of scarlet fever reported during 1913, with five deaths, giving a death rate of 3.8 per 100,000 population. This was the greatest number of deaths from scarlet fever which has occurred in Richmond in any year since 1886. Of the five fatal cases, three were in one home, and two of these had true diphtheria as a complication. In this home there were two cases besides the fatal ones, and one of these also had true diphtheria. All these cases were exceedingly virulent, being "septic" from the time when first seen.

The following table gives the number of deaths and the death rate from scarlet fever in Richmond for the past 42 years:

Table Showing the Annual Number of Deaths from Scarlet Fever and the Annual Death Rate per 100,000 *in the City of Richmond, Virginia, from* 1872 *to* 1913.

YEAR	DEATHS FROM SCARLET FEVER	
	Number of Deaths	Death Rate per 100,000
1872	2	3.7
1873	4	7.3
1874	3	5.3
1875	1	1.7
1876	6	10.2
1877	27	45.1
1878	105	171.9
1879	98	157.2
1880	4	6.3
1881	0	0.0
1882	8	11.9
1883	2	2.9
1884	6	8.5
1885	8	11.0
1886	6	8.1
1887	1	1.3
1888	1	1.3
1889	1	1.3
1890	1	1.2
1891	3	3.7
1892	1	1.2
1893	1	1.2
1894	1	1.2
1895	3	3.6
1896	3	3.6
1897	1	1.2
1898	2	2.4
1899	2	2.4
1900	3	3.5
1901	0	0.0
1902	2	2.3
1903	3	3.4
1904	2	2.2
1905	1	1.1
1906	3	3.2
1907	0	0.0
1908	1	.9
1909	1	.9
1910	0	0.0
1911	3	2.3
1912	1	.8
1913	5	2.8

The following diagram shows graphically the death rates given in the preceding table.



Combining the figures in the above table, we get the following average annual number of deaths and average annual death rate from scarlet fever in Richmond for five-year periods.

PERIOD	AVERAGE ANNUAL MORTALITY FROM SCARLET FEVER	
	Number of Deaths	Rate per 100,000
1872-1874 (3 years)	3.0	5.4
1875-1879 (5 years)	47.4	77.2
1880-1884 (5 years)	4.0	5.9
1885-1889 (5 years)	3.4	4.6
1890-1894 (5 years)	1.4	1.7
1895-1899 (5 years)	2.2	2.6
1900-1904 (5 years)	2.0	2.3
1905-1909 (5 years)	1.2	1.2
1910-1913 (4 years)	2.2	1.7
1909-1913 (last 5 years)	2.0	1.6
Entire period of 42 years	7.9	12.2

Inspection of the first of the above tables shows that the forty-two-year period naturally divides itself into three periods of very different mortality from scarlet fever, as shown in the following table:

PERIOD	Average Annual Mortality from Scarlet Fever	
	Number of Deaths	Rate per 100,000
1872-1879 (8 years)	30.8	50.3
1880-1886 (7 years)	4.9	7.0
1887-1913 (27 years)	1.7	1.9

All the above tables and the diagram show a most remarkable record from scarlet fever, as I have always called attention to in my annual reports. In the past 27 years (1887-1913, inclusive) there have been only 46 deaths in Richmond from scarlet fever, an annual average of 1.7 deaths, while the average annual death rate from this disease during the same period has been only 1.9 per 100,000 population.

Need of Constant Vigilance.

In spite of the continued low death rate from scarlet fever in Richmond for the past twenty-seven years, we would be criminally negligent if we allowed ourselves to become lax in our methods of dealing with this disease. Even though the records of other places and the experience of physicians and health officers elsewhere, as well as the views taken by all writers on the subject, failed to warn us, we have the record of Richmond itself in 1877, 1878 and 1879 as a constant reminder of the deadly character of scarlet fever. Why the disease caused such a high death rate in the first of these years (45.1 per 100,000) and such a terrible rate in 1878 (171.9) and 1879 (157.2) no one is in position to say. Nevertheless the record of these three years shows us what this disease can do even in our climate.

We therefore invariably insist that every known precaution shall be taken to prevent the spread of scarlet fever, and in our directions to the family, as well as in discussing this disease with our doctors, we never speak of it as a trifling matter. It really seems almost incredible that measles should have caused more deaths in Richmond in the past four years than have been caused by scarlet fever in the past thirty years, while whooping cough has caused more deaths in Richmond in the past four years than scarlet fever has caused in thirty-four years. In fact, whooping cough was responsible for more deaths in 1910 and again in 1911 (to go back no further) than scarlet fever has caused in twenty-seven years.

These facts must never be allowed to make us careless or indifferent in dealing with scarlet fever. We cannot say when the conditions which obtained in 1877, 1878 and 1879 (what they were we cannot even conjecture) may recur. If this should happen, our fight would be greatly weakened if we had to deal with public and professional indifference until the progress of the scourge commanded panicky respect.

Measles.

The year 1913 was another "measles year." This epidemic again came at a three-year interval and again, as in the epidemic of 1910, its coming was predicted. Our 1913 epidemic began in November, 1912, 23 cases being reported in that month. During the next month 246 cases were reported. There was no death from this disease in either November or December. Although the number of cases during the following months of the epidemic is given in Table No. 23, and also in the report of the Medical Inspector, the progress of the epidemic will be better understood if these figures are given here as well.

MONTH	CASES REPORTED	DEATHS
1912		
November	23	0
December	246	0
1913		
January	1,618	7
February	2,007	6
March	1,183	8
April	274	3
May	79	1
June	16	0
Total, 1913	5,177	25
Total for entire epidemic	5,446	25

As in our 1910 epidemic, the starting point was in a school, a private school in this instance. Again, as in 1910, an epidemic being due, the occurrence of a number of cases at the same time in a single small group of children, all of whom had cases of great severity, was a sufficient signal for announcing that the disease would soon be on us in epidemic proportions.

It is impossible to give anything like a complete account of all the interesting features of this epidemic. Only a few of the most important points will be discussed, and these but briefly.

At the start we followed our former practice of closing rooms in the public schools in which a case of measles had developed, or, rather we kept out the pupils who were not immune through a previous attack. This closing was from the ninth to the fourteenth day, inclusive, from the day that the child who developed the disease was first taken ill. The principle on which we worked was the well known fact that measles is contagious several days before the eruption appears. The eruption appears regularly on the fourteenth day, but the case is contagious on and after the ninth day. Children who have been exposed to the disease are no menace to others prior to the ninth day, and hence there is nothing to be gained by taking any action before that time. By excluding nonimmunes from the ninth day to the fourteenth, those who are developing the disease reach the eruptive stage and are, of course, easily recognized and excluded.

This plan worked well; that is, in every such instance several children in such a room developed plain cases of measles by the fourteenth day, but, not having been allowed to attend school for the preceding six days, no further cases were contracted from them. Very soon, however, the epidemic assumed such proportions that to have continued this policy would have meant almost complete disruption of the public school system. I reached this conclusion on January 14th and communicated with Dr. J. A. C. Chandler, Superintendent of Schools, asking for a conference on the situation. Dr. Chandler, on learning why I desired this conference, stated to me that he had been on the point of calling me up for the same purpose. At this point I wish to state that in his co-operation with us Dr. Chandler showed the same enthusiasm which he has shown on all occasions. His understanding of these matters and his willingness at all times to follow the lines which we desire are of the utmost assistance.

As a result of our conference we agreed that we would have to abandon the policy of excluding from school for six days all nonimmune children in rooms in which a case of measles had developed. In place of this a meeting of all the school principals and teachers was called and I went over with them our modified plan, after a short talk in which the nature of measles, the means by which it is spread and all similar matters, were fully explained.

General recess was done away with, thus limiting the contact of pupils in different rooms. A special school circular was gotten up and a supply sent to every school. The principals were instructed to give a copy of this circular to every pupil in rooms in which a case of measles developed. The main points which we sought to impress upon the school children, and, through them, upon their parents, are set forth in the circular above mentioned. I cannot, therefore, do better than to include this circular in this report.

RICHMOND HEALTH DEPARTMENT

SPECIAL NOTICE TO PARENTS OF CHILDREN ATTENDING SCHOOLS IN WHICH THERE IS MEASLES

Measles is the most serious of all eruptive fevers of infancy and childhood in our climate. The disease is the most contagious of all known diseases. The history of measles in Richmond shows that epidemics of this disease come at more or less regular intervals. Our last epidemic was in 1910, and the last one before this was in 1907. In these epidemic years the disease is of a peculiarly severe type and is also more highly contagious than it is in "off years."

Study of our past records showed that an epidemic would be due again during the present winter. This has come as anticipated, having begun at the end of November, 1912—much earlier in the season than in either 1907 or 1910. Owing to the highly contagious nature of measles, the Richmond Health Department cannot hope to head off the epidemic. In addition to its high degree of contagiousness, the reason why it is impossible to check the spread of this disease is due to the fact that measles is highly contagious for five or six days before the eruption appears. During this time a child who is developing measles may seem to be scarcely sick at all, or to be suffering from an ordinary cold in the head. A child in this stage of the disease mingles with other children, and these children become infected before the eruption appears in the first case.

Measles of this severe type has appeared in the school attended by your child. If this child has not already had the disease, it is exceedingly likely that he or she will have it this winter.

In children old enough to attend school measles is not likely to prove fatal even in the present severe type of the disease. In all previous epidemics most of the deaths have been in children under three years of age.

The special object of the Richmond Health Department in sending out this circular is to acquaint parents with the above facts and to urge them to give careful attention to the following points:

(1) Remember that measles is not an insignificant matter.

(2) Every case of measles should be under the care of a good physician.

(3) As your child has been exposed to measles in school, be on the lookout for early symptoms of this disease. These symptoms resemble an ordinary cold in the head. The eyes are also decidedly inflamed. If these symptoms appear, keep the child indoors and away from other children and send for your family physician.

(4) If there are younger children in the house, they will almost certainly develop the disease if they have been exposed to another case. Be sure, therefore, to keep close watch over your children who have been exposed. Be especially careful to see that they are well clothed and protected against extremes of temperature while they may be developing the disease.

(5) Most important of all, remember that measles is especially serious in children under three years of age, and if any child under three develops measles, do not fail to send for your family physician immediately. You could not possibly do a worse thing than try to treat this disease yourself in a very young child.

We cannot impress on you too strongly the importance of all the above. By reading it carefully and observing all points carefully, you will undoubtedly be enabled to do away with a large part of the danger in connection with your children.

While we strongly advise you to have your physician take charge of every case of measles which may develop in your home, we cannot, of course, insist on this. If, contrary to our advice, you do not call in your physician for any case, [illegible] not neglect to report every case to the Richmond Health Department.

It frequently happens that children who would otherwise be excluded from school during an epidemic of measles are not excluded if it is certain that they have already had the disease. You can see, therefore, how important it is that our records should show whether or not any child of yours has had the disease, and, in case no physician is in charge, we can get such record only if you yourself report the case and have it seen by our Medical Inspector.

E. C. LEVY, M. D.,
Chief Health Officer.

Jan. 15, 1913.

Measles Cases Not Attended by Any Physician.

Although the very fact that there were 5,453 cases of measles in this epidemic—a greater number than was reported in either of the two preceding ones—might seem to indicate that little was accomplished by the vast amount of work which was done by the Health Department, this I do not believe to be true. I am certain that our efforts were effectual in preventing an even greater epidemic, but I am still more confident that the number of deaths was most decidedly lessened.

It had been our experience that no physician was called in to treat secondary cases in a great many households, the parents believing themselves to be perfectly capable of carrying out in such cases the measures followed by the doctor in the first case. As the first case was almost always a child of school age, and as the danger of a fatal issue in older children is far less than in the younger ones, especially in those under four years of age, we used every effort to impress on parents the necessity of having their physician called in as soon as the first symptoms appeared in a little child. We scored quite a point by predicting when these younger children would show the first symptoms of measles, when the eruption would appear, etc. As these things came about as we predicted in almost every instance, the parents naturally saw that our advice was also sound.

But we did not rest with having given this advice at the time of our first visit to the initial case. Careful record was kept of the non-immune children in each household, and each house was revisited at the time when secondary cases were due. Furthermore, we cautioned the parents in every instance, when our first visit was paid, to keep careful watch over any younger, non-immune child, and to do everything to have the child in the best possible condition to withstand the disease when it made its appearance. We advised them to see that the bowels were in good condition, to do everything possible to avoid having the child catch cold and, finally, to lose no time in sending for the doctor when the first symptoms of the disease appeared. We also used every effort to have parents keep the non-immunes away from other children and explained to them that in so doing they would probably be able to prevent many other cases in the neighborhood.

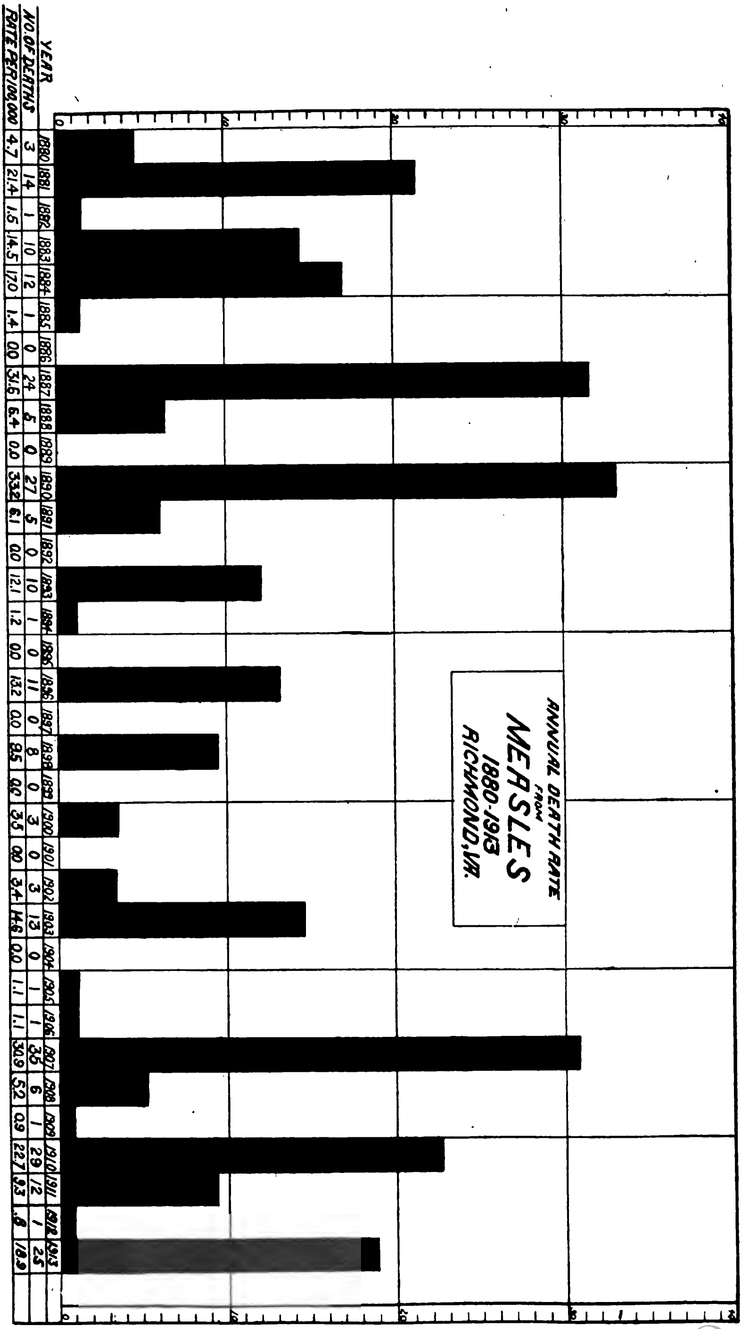
As stated above, it is impossible to give a complete account of all the interesting points in connection with the measles epidemic of 1913. I hope at some time to make this the subject of a special paper.

The following table gives the number of deaths and the death rate from measles in Richmond for the past thirty-four years.

Table Showing the Annual Number of Deaths and the Annual Death Rate from Measles, Richmond, Virginia, 1880-1913.

YEAR	No. of Deaths	Annual Death Rate per 100,000	YEAR	No. of Deaths	Annual Death Rate per 100,000
1880	3	4.7	1895	0	0.0
1881	14	21.4	1896	11	13.2
1882	1	1.5	1897	0	0.0
1883	10	14.5	1898	8	9.5
1884	12	17.0	1899	0	0.0
1885	1	1.4	1900	3	3.5
1886	0	0.0	1901	0	0.0
1887	24	31.6	1902	3	3.4
1888	5	6.4	1903	13	14.6
1889	0	0.0	1904	0	0.0
1890	27	33.2	1905	1	1.1
1891	5	6.1	1906	1	1.1
1892	0	0.0	1907	35	30.9
1893	10	12.1	1908	6	5.2
1894	1	1.2	1909	1	.9
			1910	29	22.7
			1911	12	9.3
			1912	1	.8
			1913	25	18.9

The death rates from measles in Richmond for the past thirty-four years, given in the above table, are shown graphically in the following diagram:



YEAR	NO. OF DEATHS	RATE PER 100,000
1880	3	4.7
1881	14	21.4
1882	1	1.5
1883	10	14.5
1884	12	17.0
1885	1	1.4
1886	0	0.0
1887	24	31.6
1888	5	6.4
1889	0	0.0
1890	27	33.2
1891	5	6.1
1892	0	0.0
1893	10	12.1
1894	1	1.2
1895	0	0.0
1896	11	13.2
1897	0	0.0
1898	8	9.5
1899	0	0.0
1900	3	3.5
1901	0	0.0
1902	3	3.4
1903	13	14.6
1904	0	0.0
1905	1	1.1
1906	1	1.1
1907	35	30.9
1908	6	5.2
1909	1	0.9
1910	29	22.7
1911	12	9.3
1912	1	.8
1913	25	18.9

Whooping Cough.

There were seventeen deaths from whooping cough during 1913, which is equivalent to a death rate of 12.9 per 100,000 population. The death rate from this disease in Richmond for the past forty-three years is given in the following table:

Table Showing the Annual Number of Deaths and the Annual Death Rate from Whooping Cough, in Richmond, Virginia, 1871-1913.

YEAR	DEATHS FROM WHOOPING COUGH		YEAR	DEATHS FROM WHOOPING COUGH	
	Number of Deaths	Death Rate Per 100,000		Number of Deaths	Death Rate Per 100,000
			1890.............	45	55.3
1871	115	219.9	1891.............	6	7.3
1872.............	. 4	7.5	1892.............	38	46.3
1873.............	17	31.0	1893.............	16	19.4
1874.............	37	66.0	1894	21	25.4
1875.............	3	5.2	1895.............	4	4.8
1876.............	72	122.7	1896.............	24	28.7
1877.............	15	25.1	1897	31	36.9
1878.............	10	16.4	1898.............	3	3.6
1879.............	1	1.6	1899.............	0	0.0
1880.............	42	66.0	1900	27	31.7
1881.............	35	53.5	1901.............	35	40.4
1882.............	12	17.9	1902.............	19	21.6
1883.............	54	78.4	1903.............	56	62.7
1884.............	19	26.9	1904.............	2	2.2
1885.............	7	9.7	1905.............	1	1.1
1886.............	42	56.5	1906.............	52	55.7
1887.............	26	34.2	1907.............	3	2.6
1888.............	3	3.9	1908.............	33	28.8
1889.............	17	21.4	1909.............	13	11.2
			1910.............	47	36.8
			1911.............	51	39.4
			1912.............	5	3.8
			1913.............	17	12.9

The following grouping of the figures in the above table shows the average annual number of deaths and the average annual death rate from whooping cough in five-year periods since 1871.

PERIOD	AVERAGE ANNUAL MORTALITY FROM WHOOPING COUGH	
	Number of Deaths	Rate per 100,000
1871-1874 (4 years)	43.3	81.1
1875-1879 (5 years)	20.2	34.2
1880-1884 (5 years)	32.4	48.5
1885-1889 (5 years)	19.0	25.1
1890-1894 (5 years)	25.2	30.7
1895-1899 (5 years)	12.4	14.8
1900-1904 (5 years)	27.8	31.7
1905-1909 (5 years)	20.4	20.0
1910-1913 (4 years)	30.0	23.2

Average number of deaths from whooping cough for each year since 1871	25.1
Average death rate per 100,000 from whooping cough for each year since 1871	33.5

Comparison of the death rates given in the above tables with the death rates from scarlet fever, diphtheria and measles (given elsewhere in this report) shows that whooping cough is the most fatal of these diseases. Measles is a close second, but diphtheria has caused nothing like as many deaths as whooping cough in the past twenty-two years, while scarlet fever has caused only forty-six deaths in Richmond in the past twenty-seven years, against forty-seven deaths from whooping cough in 1910, and fifty-one in 1911—going back only four years to get these last figures for comparison.

The worst feature of the case is our lack of knowledge as to how this terrible mortality can be lowered. One reason for the high mortality of whooping cough is the fact that the characteristic whoop is not present during the first three weeks or so of the disease, yet the disease is contagious during this time. This gives unlimited opportunity for the spread of the disease from cases the nature of which is not recognized. Then again, the course of the disease is so protracted that the patients are not confined to the house. Their own welfare leads to their going out in the fresh air.

I have called attention to one plan which offers a little hope of lowering the mortality of whooping cough. Nearly half of the deaths from this disease occur in infants under one year of age, and over four-fifths occur under the age of two years. The case fatality under two years is about fifty per cent.; between two and four it is about twenty-five per cent.; from four to seven it is about seven per cent., while very rarely does the disease terminate in death in children over seven years of age. These figures are from our reported cases and deaths in Richmond during 1911. They are not. of course, to be regarded as strictly accurate, as not every case is reported. In fact, in many cases no physician is called in at all, and this is especially likely to be the case with older children. With all cases reported, the case fatality of the youngest infants would be slightly lowered, while that of older children would be greatly lowered, thus increasing the contrast shown by the above figures.

Making every allowance, it may be confidently asserted that the great mortality of whooping cough is in infants under two years of age. Every effort should, therefore, be used to protect infants under two years during epidemics of whooping cough. If they can be carried to the age of two without contracting this disease, the chances are that they will not succumb to it in any later attack. If parents could be brought to understand this, they could usually prevent their infants under two years of age from being brought into close contact with other children whenever whooping cough was present in the community, unless there was a case in the home itself. This would involve a great amount of intelligent supervision, but, with the plain lesson of the above figures before her, every mother should be willing to take a great deal of trouble in this connection.

It is to be hoped that recent advances in the treatment of whooping cough will lessen the terrible fatality of this disease, but it is too soon yet to predict to what extent it will do so.

Smallpox.

There were ten cases of smallpox in Richmond during 1913. with no deaths. As is always the case, we would have been free from the disease but for cases brought in from outside. Again, as in other years, a few of these outside cases were not recognized by the doctor whose advice was sought, or else they were so mild as to have no doctor. The result of this was that we knew nothing of such cases until one or more secondary cases developed.

Our methods of dealing with smallpox were the same as in previous years, so it is unnecessary to go into any discussion of this. The report of the Medical Inspector gives all the necessary information concerning smallpox during 1913. I, therefore, refer you to his report.

Tuberculosis.

There were 214 deaths from pulmonary tuberculosis (consumption) and 60 deaths from other forms of tuberculosis during 1913. The death rate from consumption was 162.1 per 100,000 population, which was by far the lowest rate on record for our city. The table near the beginning of my report gives the death rate from consumption and other forms of tuberculosis for the past seven years. This table shows that the lowest rate on record before 1913 was in 1908, when the rate was 194.3 per 100,000. The rate in earlier years was far in excess of any of the years given in the table.

In giving the death rate from consumption it is only fair to state that there were 34 deaths from this disease at Pine Camp during 1913. Only one of these was not a resident of Richmond at the time of entering this institution. As Pine Camp is located outside of Richmond these thirty-four deaths are not included in our tables of deaths, this being the accepted rule of statistical practice, in accordance with which we charge against our city all deaths among nonresidents occurring within our limits. There were 297 such deaths included in our mortality tables in 1913, of which eight were due to consumption. If we include in our deaths from consumption the 214 which occurred in Richmond (eight of them among nonresidents) and the entire thirty-four who died at Pine Camp, there were 248 deaths from consumption in 1913. This gives a rate of 187.8 per 100,000, which is still lower than any rate ever before recorded in our city. There is every probability that some of the thirty-four who died at Pine Camp would have left Richmond before their death if there had been no such institution for them to which they could go without charge.

The above figures show that our death rate from tuberculosis is steadily declining, and, while it is impossible to calculate exactly how much of this reduction should be attributed to the work of the Richmond Health Department, we can certainly claim that it has been one of the greatest factors in bringing about this result. The free examination of sputum, the instructive work which we have done among the people and our tuberculosis dispensaries have undoubtedly done a great deal. Our dispensaries (for the work of which I refer you to the report of the two chiefs of clinic) have not only done a great deal directly and through the home visits paid to dispensary patients by our nurses, but they have also been invaluable as feeders for Pine Camp. But for them it is difficult to see how even the thirty-four beds at this institution would have been kept filled at all times. The value of the work of Pine Camp itself has been very great. To remove from our city the patients, especially those in advanced stages of consumption, who are treated there greatly lessens the number of foci of infection.

As a matter of fact the reduction in our death rate from consumption has actually been much greater than the above figures bring out. Formerly there were a great many deaths from this disease which were entered under other causes of death. I have discussed this fully in several of my annual reports. It is certain that a large proportion of the deaths which were formerly attributed to malaria on the death certificates were actually due to tuberculosis. As stated elsewhere in the present report, the death rate from malarial fever has been reduced from an average of 23.1 per annum to an average of 3.6. This has been accomplished by insisting on correct statements as to the cause of death. Chronic bronchitis is another title to which many deaths actually due to consumption were formerly attributed by the attending physicians. In spite of the fact that few, if any, deaths from consumption are now deliberately attributed to these other causes, the death rate from consumption is steadily declining, even with this extra load which it has to carry. The real reduction is, therefore, much greater than the published figures indicate.

Comparative Mortality of the White and Colored Races.

As is always the case, the colored death rate greatly exceeded that of the whites. It was 60 per cent. greater, if all deaths are considered, and 75 per cent. greater if nonresident decedents of both the white and colored races are excluded. The excess of the colored death rate over the white rate was slightly less than usual, having been 66 per cent higher in 1909, 64 per cent in 1910, 66 per cent in 1911, and 68 per cent in 1912.

The colored race constituted 37 per cent of the total population in 1913, but furnished 48 per cent of all the deaths, if deaths among nonresidents are included, and 51 per cent if nonresidents are excluded. The facts are perhaps even more clearly brought out by still another form of statement. The colored race in Richmond in 1913 had only 57 per cent as many representatives as the white race, yet the number of deaths among the colored race was 92 per cent of the number of deaths among the white race, if nonresident decedents of both races are included, and 2 per cent greater than the number of deaths among the white race, if nonresidents are excluded.

The comparison is of still greater interest when we come to consider the relative mortality of the white and colored races from certain causes of death. This is given in the following table. It will be seen that the same diseases show the greatest excess as in previous years, although the percentage of excess naturally varies slightly.

. . . .

Table Showing Comparative Mortality of the White and Colored Races from Certain Causes in Richmond, During, 1913.

CAUSE OF DEATH.	No. of Deaths.		Death Rate per 100,000*		Ratio of Colored Death Rate to White.
	White	Colored	White	Colored	
Typhoid fever—					
Including nonresidents	18	9	21.6	18.5	.86
Residents only	12	8	14.4	16.5	1.15
Malarial fever	0	0	.....	.....	....
Measles	15	10	18.0	20.6	1.15
Scarlet fever	4	1	4.8	2.1	.43
Whooping cough	9	8	10.8	16.5	1.53
Diphtheria (including croup)	8	0	9.6	.....	....
Influenza	14	16	16.8	33.0	1.97
Dysentery	8	13	9.6	26.8	2.80
Tetanus	5	2	6.0	4.1	.69
Pellagra	7	2	8.4	4.1	.49
Consumption	74	140	88.6	288.4	3.26
Other forms of tuberculosis	36	24	43.1	49.4	1.15
Syphilis	13	25	15.6	51.5	3.31
Cancer (of all organs)—					
Nonresidents included	81	34	97.0	70.0	.72
Residents only	61	28	73.0	57.7	.79
Diabetes	13	4	15.6	8.2	.53
Apoplexy	86	100	103.0	206.0	2.00
Other diseases of the nervous system	12	5	14.4	10.3	.72
Organic heart disease	161	118	192.8	243.1	1.26
Bright's disease	139	82	166.4	169.0	1.02
Heart and Bright's disease combined	300	200	359.2	412.0	1.15
Pneumonia (lobar or unqualified)	43	59	51.5	121.5	2.36
Broncho-pneumonia	21	73	25.2	150.4	5.98
Lobar and broncho-pneumonia combined	64	132	76.6	271.9	3.55
All diseases of the respiratory system (consumption not included); that is, Group IV of the International Classification	105	203	125.7	418.2	3.33
Diarrhea (under 2 years)	58	54	69.4	111.3	1.60
Diarrhea (over 2 years)	22	19	26.3	39.1	1.49
Appendicitis—					
Including nonresidents	25	5	29.9	10.3	.34
Residents only	13	2	15.6	4.1	.26
Diseases of the puerperal state	21	16	25.2	33.0	1.31
Congenital debility	70	90	83.8	185.4	2.21
Senile debility	13	3	15.6	6.2	.40
†Legal electrocution	5	9	6.0	18.5	3.10
Suicide	23	3	27.5	6.2	.22
All other violent deaths	68	83	81.4	171.0	2.10
Ill-defined or unknown	7	24	8.4	48.3	5.90
Total deaths, all causes—					
Including nonresidents	1.411	1,307	1,690	2.693	1.60
Residents only	1,200	1,221	1,437	2,516	1.75

*All rates in this table are calculated from the official figures of the U. S. Bureau of the Census for the 1913 midyear population. These figures are: White, 84,481; colored, 48,941.

†No one of the fourteen criminals electrocuted during 1913 was a resident of Richmond or committed in Richmond the crime for which he was legally electrocuted.

Average Age at Time of Death.

The average age at time of death of all who died in Richmond during 1913 was 36.52 years, or 36 years 6 months and 7 days. The average age of white decedents was 42.32 years, or 42 years 3 months and 25 days; of colored decedents, 30.25 years, or 30 years and 3 months. These figures are calculated from the age distribution of all decedents as given in Table No. 12 of this report, except that all decedents under one year are grouped together as having lived an average of one-half a year. The error thus introduced is very small.

The average age at time of death was 10 months and 17 days less than in 1912. For white decedents it was 1 year 11 months and 9 days less, while for colored decedents, it was 1 month and 24 days less. The average age at death, for both races was so much greater in 1912 than it was in 1911, and so much greater in 1911 than in 1910, that the average age at death in 1913 was 1 year and 2 months greater than in 1911, and 2 years and 4 months greater than in 1910.

As repeatedly stated in my reports, the average age at time of death cannot be used in comparing the longevity of the inhabitants of different communities. It has some value, however, in connection with the study of statistics of deaths in the same community year by year. Lowering of infant mortality in any community naturally raises the average age at death. Lessened mortality from the acute contagious diseases of infancy and childhood (scarlet fever, diphtheria, measles, etc.) works the same way. If these two factors were the only ones which had the effect of increasing the average age at time of death in any community, then this increase would be of considerable significance. But there are many other factors, such, for example, as the death in any year of an unusual number of very old persons, which complicate the problem.

Our Milk Supply.

It gives me great satisfaction to report to you another year of uninterrupted advance in the efficiency of our work for the sanitary improvement of our milk supply. For the most part this work was simply a continuation along the lines which we have foowed sinlce dairy inspection was started on May 1, 1907, though, in addition to this, there were a few new departures in the nature of our work and several interesting developments worthy of bringing to your attention and making matters of permanent record.

So far as the routine of our work is concernod, the results are fairly well expressed by stating that there was a still further advance in the average score of our dairy farms. This average was 82.8, against 82.5 for 1912. An advance of only .3 may seem a small matter at first glance, but it is very far, indeed, from being so. In the first place, I am certain that there is no other city of anything like the size of Richmond which can show an annual average as high as 80 for all dairy farms from which its milk and cream are obtained. I will later on give confirmation of the highest kind to this statement. Our average annual score reached 80.5 in 1910. Advance beyond this point has of necessity been slow. It must be constantly borne in mind that unremitting work of the hardest kind is needed to maintain such an average, to say nothing of going beyond it. Again, I am certain that our scoring is each year more and more rigid. A higher average has of necessity made our inspectors more critical. Moreover, when a dairy farm scores as high as 80, it is practically impossible to insist on further improvement as a necessary health measure.

The following tables show the standing (the "score") of the dairy farms shipping milk and cream to Richmond for each month since our work of dairy inspection was started, in May, 1907.

Tables Showing the Percentage of Dairy Farms in the Various Classes from May, 1907, Through December, 1910.

CLASS	Percentage of All Dairies Inspected for the Month Which Fell in Each Class.							
	1907							
	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Scoring below 30	13.8	26.5	3.9	4.0	......	......	......	......
Scoring between 30 and 40.	30.8	42.9	21.0	10.7	......	......	......	......
Scoring between 40 and 50.	26.2	22.4	38.2	29.4	40.0	23.7	14.8	15.8
Scoring between 50 and 60.	13.0	8.2	22.4	33.3	45.0	35.6	45.9	36.8
Scoring between 60 and 70.	10.8	......	13.2	22.6	12.5	33.9	29.5	23.6
Scoring between 70 and 80.	4.6	......	1.3	......	2.5	6.8	8.2	18.4
Scoring between 80 and 90.	......	......	......	......	......	......	1.6	5.4
Scoring between 90 and 100	......	......	......	......	......	......	......	......
Av. of all scores for month.	41.5	36.4	47.5	50.5	51.4	57.0	58.4	60.5

CLASS	Percentage of All Dairies Inspected for the Month Which Fell in Each Class.											
	1908											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Scoring 40—50	2.8	....	....	....	....	....	....	....	....	....	....	....
Scoring 50—60	11.3	13.6	6.8	5.7	1.4	....	....	....	....	....	....	....
Scoring 60—70	35.2	44.1	39.8	34.3	29.7	27.2	24.7	16.4	16.0	10.6	26.0	27.0
Scoring 70—80	31.0	25.4	34.2	42.9	51.4	48.4	48.0	52.2	50.7	46.8	46.0	39.7
Scoring 80—90	19.7	16.9	19.2	17.1	14.8	21.2	23.4	25.4	29.0	38.3	22.0	30.1
Scoring 90—100	....	....	....	....	2.7	3.2	3.9	6.0	4.3	4.3	6.0	3.2
Ave. of all scores for the month	70.4	70.0	71.5	72.0	74.0	75.2	75.3	76.4	76.1	77.5	75.6	75.6

CLASS	Percentage of All Dairies Inspected for the Month Which Fell in Each Class.											
	1909											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Scoring 50—60	....	....	*3.2	....	....	....	....	...	....	....	....	....
Scoring 60—70	23.8	23.7	30.6	25.4	20.8	29.8	13.9	21.1	15.3	22.6	15.0	6.9
Scoring 70—80	54.0	49.2	51.6	54.0	52.8	46.4	53.2	53.3	52.8	46.6	48.4	57.5
Scoring 80—90	17.4	23.7	11.4	15.8	23.6	20.2	29.1	21.1	26.4	25.0	33.4	29.9
Scoring 90—100	4.8	3.4	3.2	4.8	2.8	3.6	3.8	4.5	5.5	4.8	3.2	5.7
Ave. of all scores for the month	74.8	74.8	72.6	75.0	75.3	74.8	76.9	75.9	77.4	76.4	77.6	78.3

*The two dairy farms scoring under 60 in 1909 were allowed to continue the sale of milk during March, owing to special circumstances

CLASS	Percentage of All Dairies Inspected for the Month Which Fell in Each Class.											
	1910											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Scoring 60—70	4.9	6.9	2.6	4.3	2.3	1.1	4.0	1.0	1.0	1.1	....	1.0
Scoring 70—80	49.4	47.2	48.7	48.5	49.5	48.9	45.5	50.0	48.5	46.1	46.5	39.6
Scoring 80—90	37.0	37.5	38.4	38.6	42.5	43.3	42.4	42.0	43.5	47.2	46.5	50.0
Scoring 90—100	8.7	8.4	10.3	8.6	5.7	6.7	8.1	7.0	7.0	5.6	7.0	9.4
Ave. of all scores for the month	80.2	79.8	80.3	80.4	79.6	81.2	80.3	80.7	80.6	80.5	80.8	81.6

CLASS	Percentage of All Dairies Inspected for the Month Which Fell in Each Class.											
	1911											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Scoring 70—80	42.1	39.1	44.1	48.9	41.1	46.1	39.8	39.6	41.0	40.6	35.0	27.1
Scoring 80—90	51.0	52.9	50.5	48.9	53.3	50.0	58.2	55.7	57.0	56.4	62.0	67.4
Scoring 90—100	6.9	8.0	5.4	2.2	5.6	3.9	2.0	4.7	2.0	3.0	3.0	5.5
Ave. of all scores for month	81.6	81.7	80.8	80.4	81.4	81.1	81.1	81.1	81.3	81.3	81.6	82.6

CLASS	Percentage of All Dairies Inspected for the Month Which Fell in Each Class.											
	1912											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Scoring 70—80.......	29.4	24.5	30.4	24.8	23.3	22.6	27.3	22.8	16.0	20.7	22.8	20.8
Scoring 80—90.......	65.2	70.2	66.7	71.5	74.1	73.6	70.0	74.2	84.0	76.6	74.3	74.5
Scoring 90—100......	5.4	5.3	2.9	3.7	2.6	3.8	2.7	3.0	....	2.7	2.9	4.7
Ave. of all scores for the month.........	82.4	82.6	82.0	82.4	82.3	82.5	82.5	82.5	82.5	82.6	82.3	83.0

CLASS	Percentage of All Dairies Inspected for the Month Which Fell in Each Class.											
	1913											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Scoring 70—80	14.2	14.3	25.6	18.1	18.7	16.1	19.5	16.0	17.8	20.0	14.4	10.0
Scoring 80—90.......	82.3	82.3	68.4	76.7	77.1	81.1	77.1	81.3	78.6	77.3	82.0	86.0
Scoring 90—100......	3.5	3.4	6.0	5.2	4.2	2.8	3.4	2.7	3.6	2.7	3.6	4.0
Ave. of all scores for the month.........	82.9	83.0	82.8	82.8	82.7	82.6	82.5	82.9	82.6	82.1	83.0	83.2

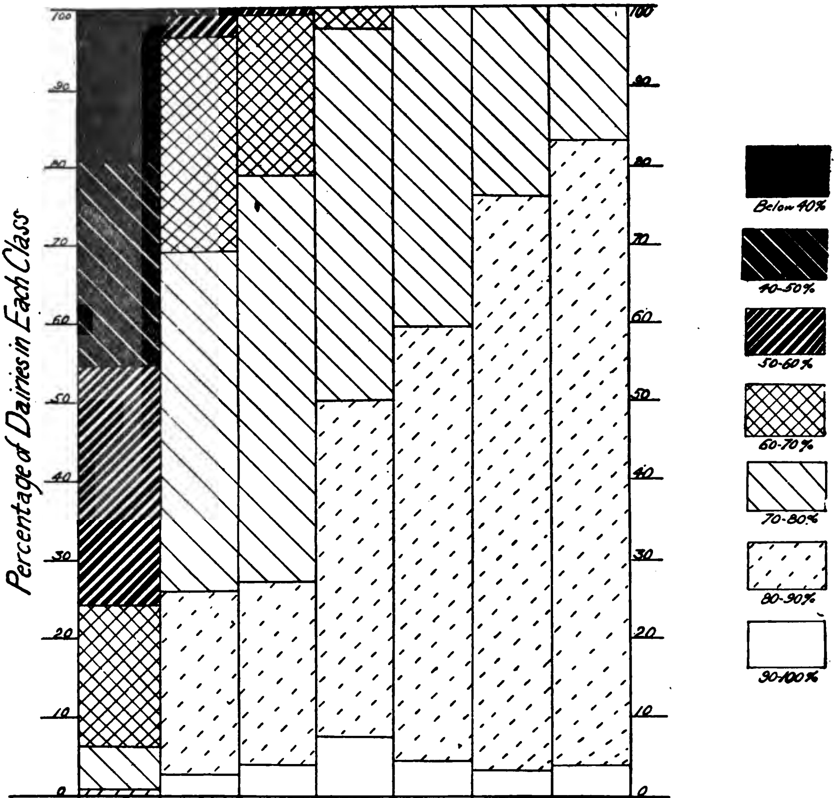
While the preceding table, showing the improvement which has been brought about in the dairy farms supplying milk to Richmond month by month, is indispensable as a record of our progress, only those who are especially interested will take the trouble to read it carefully. For this reason the following condensed table, giving the scores by years instead of by months, is added:

Table Showing the Percentage of Dairy Farms in the Various Classes from May, 1907, Through December, 1913—Summary By Years.

CLASS	Percentage of All Dairy Farms Inspected During the Year Which Fell in Each Class.						
	Year						
	1907	1908	1909	1910	1911	1912	1913
Scoring below 30............	6.0	......	......	......	......	......	......
Scoring between 30 and 40....	13.2	......	......	......	......	......	......
Scoring between 40 and 50....	26.3	.2	......	......	......	......	......
Scoring between 50 and 60....	30.1	3.2	.3	......	......	......	......
Scoring between 60 and 70....	18.3	27.6	20.8	2.5	......	......	......
Scoring between 70 and 80....	5.2	43.1	51.7	47.4	40.4	23.8	17.0
Scoring between 80 and 90....	.9	23.1	23.1	42.4	55.2	72.9	79.2
Scoring between 90 and 100...	......	2.8	4.1	7.7	4.2	72.9	79.2
Ave of all scores for year.	50.4	74.1	75.8	80.5	81.3	82.5	82.8

In order to make the results which we have obtained apparent at a glance, the following diagram is given. It gives in graphic form the figures in the last preceding table.

DIAGRAM SHOWING IMPROVEMENT IN
DAIRY SCORES
DURING SEVEN YEARS OF DAIRY INSPECTION
1907-1913
HEALTH DEPARTMENT RICHMOND, Va.



Year	1907 (8 mos.)	1908	1909	1910	1911	1912	1913
Total No. of Scores	520	846	1000	1066	1220	1250	1360
Average Score	50.4	74.1	75.8	80.5	81.3	82.5	82.8

The preceding tables and diagram bring out so clearly the great improvement in our dairy farms which has been brought about in the six and two-thirds years during which we have had dairy inspection, that it seems almost superfluous to make any comment concerning them. Nevertheless their significance will be briefly discussed.

One of the most notable features is that in 1913 only 17 per cent of our dairy farms scored under 80, while in the first year of dairy inspection (1907) 99.1 per cent scored under 80, while it was not until the seventh month of dairy inspection (November, 1907,) that a single one of our dairy farms scored as high as 80.

Another very striking way of showing our results is that, with the exception of the .9 per cent scoring between 80 and 90, dairies which scored between 70 and 80 the first year represented our best class of places, while dairies in this class now represent our worst class of places and only 17 per cent of our dairy farms (just a little over one-sixth of all) are in this lowest class.

Many similar comparisons, showing the magnificent results which have been brought about by our dairy inspection, might be made. These, however, would still be our own figures and hence open to the criticism that, while figures cannot lie, liars can nevertheless figure. It is, therefore, gratifying to be able to bring forward testimony of another kind—the opinion of a body of experts who have had the opportunity of seeing for themselves the kind of dairy farms from which Richmond gets her milk supply.

Praise From High Authority.

Early in May the National Commission on Milk Standards held a meeting in Richmond. This commission was created by the New York Milk Committee, in 1911, for the purpose of formulating standards for milk along broad lines, standards which, with allowances here and there to meet special local conditions, might be adopted throughout the entire country. The commission is made up of men from many localities, chemists, bacteriologists and executive officers, all having done work of recognized value in connection with some special phase of the milk problem. Originally twenty in number, there are now seventeen members of this commission.

Prior to their meeting in Richmond last May, the commission had held four meetings—two in New York City, one partly in New York City and part in Homer, N. Y., and one in Chicago. At each of these meetings I had occasion to refer to the work which the Richmond Health Department had done in connection with the sanitary improvement of our milk supply. I found that the other members of the commission did not consider it practicable to set a standard for bacteria or for dairy scores as high as that which has actually been attained in Richmond. Furthermore, it was very evident to me that my colleagues on the commission felt that I was greatly exaggerating (to use a euphemistic expression) what had been accomplished here.

For this reason I was especially anxious to have the members of the commission see for themselves, and I, therefore, backed most enthusiastically by Mayor Ainslie, invited the commission to hold its next meeting in Richmond, and, as indicated above, this invitation was accepted. In the morning of the first day's session three hours were spent visiting dairy farms around Richmond. It was especially impressed on the members of the commission that this trip had been planned to exhibit average conditions and not merely to show to them our best dairy farms. Every dairy farm along the road by which the party went out and the one by which they returned was visited—some eight or ten in all. We were fortunate in having a clear, though unseasonably warm, day. To be out in the country on such a morning was in itself a delight. In several of the cow barns the dairymen had in the concrete mangers in front of each cow a sprinkling of crimson clover. Even the cows seemed in good humor, and, like their visitors, glad to be alive.

Pleasant as were all the circumstances, it was actual conditions which attracted our guests. The first barn or two naturally were accepted as good, but occasioned no special comment. Every city, no matter how indifferent its milk supply, can show a few good dairy farms. Indeed, Richmond does not claim to have any special "show" dairy. But as the trip went on and as our visitors saw dairy farm after dairy farm to which there could be no exception taken from a sanitary point of view, they began to see the real significance of it all, and to realize what it meant for a city to get its entire milk supply from dairy farms with an average score above 80 and with not one scoring under 70. They saw dairy farms whose owners were fairly well fixed as to this world's goods, who conducted a dairy business as more or less of a fad and who had the wherewithal to make their places just what they wished. They saw other dairy farms whose owners were in the dairy business for a livelihood, men who had erected their own barns. This latter class of places was as sanitary as the former.

As the morning wore on, one member of the commission after another expressed his complete conversion. It was, however, at the public meeting held that night that the members of the commission expressed their views. Every one of them who spoke stated that in coming to Richmond he had expected to find fairly good conditions, but that he, and the other members of the commission, had been sure that the excellence of our dairy farms had been exaggerated. All admitted, after seeing for themselves, that nothing except this could have made them believe that a city the size of Richmond could possibly get its milk supply entirely from the kind of places they had that day seen. Several of the speakers went as far as to say that Richmond undoubtedly had the best milk supply of any city in the United States.

The Tuberculin Test.

In March the Board of Health, upon my recommendation, adopted a rule requiring that on and after May 1, 1913, every new shipper of milk or cream into Richmond would have to show that his entire herd was free from tuberculosis, as demonstrated by the tuberculin test, and that the same requirement would apply to all new cows added to old herds. This rule has already done much good. It is, of course, the forerunner of a rule, to be adopted later on, requiring that all milk or cream sold on this market shall come entirely from cows not responding to the tuberculin test.

Good Will of the Dairymen.

It is also most gratifying to be able to report that the friction between the Health Department and the dairymen, which was so common during the first years of our inspection, has practically disappeared. Having made this statement, it is best to anticipate the question which may arise in the minds of some, namely, whether this smoother sailing is not due to our being less painstaking in our inspections and less insistent in our requirements. This question can be answered with a most emphatic No. On the contrary, as just stated above, our scoring has been decidedly more rigid and our standard progressively higher.

It is easy to give the chief causes which have brought about this better state of affairs. First of all, there is now almost perfect mutual understanding between the dairymen and the Health Department. The dairymen have learned that our requirements are reasonable and that they will always receive just treatment from us, with absolutely no favoritism. Then again, the dairyman who is called to time on account of bad conditions, or who is shut out if conditions are very bad, will get scant sympathy from the rest of the dairymen, since they themselves are working hard to keep their places and their methods up to standard and they see the injustice to themselves in allowing any one else to sell an inferior product on the same market. They have learned that it is not difficult to live up to our requirements and they want every one to do so.

Another very important factor in the situation under discussion is that our dairymen find that it pays to follow our requirements. From the very beginning of our inspection work, seven years ago, I have insisted that there is not a single point which makes for good, clean milk which does not also turn out to be a good thing for the dairymen themselves. Cows kept in a clean, well-lighted and well-ventilated barn, when they are not out of doors, actually produce a sufficiently greater amount of milk to make these things pay. This is an immediate result, while as time goes on, the dairymen find that the health of their cows is better. We insist that all manure shall be removed promptly from the barn to a point not less than 100 feet therefrom, and we strongly advise that it be put into a tight receptacle, or, better yet, spread daily on the fields. Doing these things not only helps to make good milk, but manure so handled has a much higher fertilizing value than when it is allowed to accumulate in the barns and then thrown in a loose pile just outside of the windows and doors. It is not necessary to give further illustrations of this kind.

One of the very prominent factors in bringing about the present good feeling is our present dairy inspector, Mr. T. J. Strauch. In his work he not only shows great tact, but he by no means confines himself to calling attention to things that are wrong. By study and close observation he has become expert in dairy matters other than simply looking after the sanitary side of dairying. The dairyman who wishes to remodel his barn or construct a new one can get from our Dairy Inspector reliable suggestions as to the best way of doing so, as well as full working sets of blueprints. In judging cows, in advice concerning their ailments, in business matters and in many other things, the dairymen find his advice invaluable to them. It is not to be wondered at, that under such conditions, the dairymen should have ceased to dread the visits of the inspector and have come to regard him as a friend and counselor and to welcome his coming.

Bacteriological Examination of Milk.

During 1913 bacteriological examination was made of 1,338 samples of market milk and of 284 samples of cream and of milk used for churning purposes only. Full tables of the results of these examinations are given by the City Bacteriologist in his report, which will be found farther on. The following table gives a summary of the bacteriological results for the year, covering the examination of the 1,338 samples of market milk.

BACTERIA PER CUBIC CENTIMETER	PER CENT OF ALL SAMPLES EXAMINED			
	1910	1911	1912	1913
Less than 10,000	14.1	31.0	42.0	37.2
Between 10,000 and 50,000	56.5	46.0	35.3	38.0
Between 50,000 and 100,000	15.3	11.7	9.2	12.4
Between 100,000 and 250,000	11.9	6.9	7.1	7.6
Between 250,000 and 500,000	2.2	2.0	3.4	3.1
Between 500,000 and 1,000,000	......	.8	1.5	1.0
Between 1,000,000 and 5,000,000	......	1.4	1.3	.7
Over 5,000,000	......	.2	2	0.0

The "bacterial index," by months and for the entire year, as well as for the preceding three years, will also be found in the report of the City Bacteriologist. This index, for the entire year 1913, was 85.0, while in 1910 it was 82.8, in 1911 it was 85.0, and in 1912 it was 85.9.

The above figures show that from a bacteriological standpoint there was no great difference between milk supply in 1912 and 1913. Not quite so great a percentage of our samples contained under 10,000 or under 50,000 bacteria to the cubic centimeter. On the other hand, however, only 1.7 per cent of our samples contained over 500,000, against 3.0 per cent in 1912. Only those who are acquainted with the bacterial counts of the milk of other cities can appreciate the significance of the above figures. To have 37.2 per cent of our milk with less than 10,000 bacteria per cubic centimeter (which is the usual bacterial standard for certified milk) and 75.2 per cent with less than 50,000 is a record not equalled by any other city as large as Richmond. In almost all large cities counts in the millions are the rule, during the summer months at any rate.

Births.

There were 3,135 births reported to the Health Department during the year, of which 1,918 (1,018 males and 900 females) were white and 1,217 (573 males and 644 females) were colored. These births are further classified in Tables No. 2, 2-a and 3. There were thirty-four fewer births reported in 1913 than in 1912.

The above figures give a birth rate of 23.74 per 1,000 for the entire population. The white rate was 22.97 and the colored rate was 25.07 per 1,000. The reporting of births is not complete, in spite of all that we do to make it so. A considerable proportion of the births which are reported do not come to us through simple compliance with the law on the part of physicians and midwives, but are secured through our finding young infants for whom no certificate of birth is on file and bringing each case of this kind to the notice of the attendant at birth. It is especially through the efforts of our corps of nurses that these unreported births are detected. Our nurses tell me that there has been a decided falling off in the number of cases of this kind. Nevertheless it is certain that, in spite of every effort, some births regularly escape recording. It is probable, however, that the unreported births do not exceed 10 per cent. It is unfortunate that there is no way of securing approximately complete returns without devoting to the matter more work than we are prepared to give. It is chiefly in connection with the question of infant mortality that the defective reporting of births is most serious. The only really useful death rate of infants is that which is based on he number of infants born, and not on the total population, but, since we get complete returns of all deaths among infants and incomplete returns of births, the percentage which the deaths among infants in any age period bears to the total number of infants of that age, cannot be correctly computed.

As has been regularly the case since we have been getting fairly good reporting of births, the number of births reported during 1913 exceeded the number of deaths. For the whole population there were 417 more births than deaths reported during 1913, or 714 more if deaths among nonresidents are excluded. For the white race, the reported births exceeded the deaths by 507, or 718 if deaths among nonresidents are excluded. The figures for the colored race are, as usual, reversed—the number of reported births being actually less than the number of deaths— ninety less, if deaths among nonresidents are included, and four less if such deaths are excluded.

The following table gives the number of births reported and the corresponding birth rate per 1,000 for each year since 1900, when the ordinance requiring the reporting of births went into effect.

Year	Number of Births Reported.	Reported Birth-Rate per 1,000.
1900*	818	9.61
1901	729	8.42
1902	752	8.55
1903	666	7.46
1904	636	7.02
1905	608	6.61
1906†	1,133	12.13
1907‡	2,311	20.37
1908	2,806	24.44
1909	2,839	24.44
1910§	2,734	21.37
1911	2,940	22.74
1912	3.069	23.49
1913	3,135	23.74

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*The present ordinance requiring the reporting of births went into effect in 1900.

†Health Department reorganized July 1, 1906.

‡Annexation of new territory on December 6, 1906, added 18,615 to population.

§Annexation of Manchester on April 10, 1910, added 10,370 to population.

Prevention of Infant Mortality.

Our work for the prevention of infant mortality followed the same lines as in 1912. The reason why this work does not include the establishment and maintenance of milk stations has been given in so many of my previous reports that it is unnecessary for me to go over this again. Briefly, however, our reasons include the following: our entire market milk supply is on such a satisfactory basis (see elsewhere in this report) that stations are not necessary in order to get good milk for infants; we regard personal instruction of the mothers and the actual demonstration of the method of preparing the babies' food as far more valuable than having the mothers get milk already prepared for them; the heat of our summers is too great to justify taking the babies to milk stations, and having the babies at the stations at least once in every two weeks is an important part of the scheme.

The instructive work done by our nursing corps of five—the head nurse and five assistants—is the chief thing done by our Department in connection with the lowering of infant mortality. During 1913 our nurses listed 1,350 babies. Of this number, 250 were dropped. The reasons for dropping babies from our list are given in the report of our chief nurse, Miss M. J. Moore, elsewhere in this report. I wish to make it very plain, however, that babies are not dropped when things are going badly, in order to publish a low mortality. This I know to be done in some places. When, however, a baby is hopelessly ill when first seen, or dies before a second visit can be paid, such a baby is, of course, dropped from our list of supervised babies. Our nurses employ instructive measures and demonstrations of the right way to care for babies, and these methods could not possibly help in instances such as those just mentioned. Other babies are dropped because their mothers move and cannot be found; others because the services of the nurses are not well received. In short, when babies are dropped it is because our statistics would not be right unless we did so.

As 1,350 babies were listed in 1913 and 250 of these were dropped, we had 1,100 babies under supervision, and their mothers or caretakers under instruction. Besides this there were 603 babies carried over from 1912, making a total of 1,703 babies under supervision during the year 1913. Of the 1,100 babies born in 1913 and under supervision of our nurses, 94 died—equivalent to a mortality of 8.5 per cent, or 1 baby in 11.7. As there were 3,135 births reported to the Health Department during 1913 and 508 deaths of babies under one year of age, the mortality of all babies under one year of age was 16.2 per cent, or 1 in 6.2. Since, however, these last figures are for all babies born in 1913, they include the 1,100 supervised babies. Deducting from these 1,100 supervised babies from the 3,135 born, we have 2,035 babies not under supervision. Similarly deducting from the 508 deaths of infants under one year the ninety-four deaths among supervised babies, the deaths among the unsupervised babies were 414. The mortality among the nonsupervised babies was 20.2 per cent, or 1 in 4.9.

The above figures show that the mortality among the supervised babies was very much lower than among the nonsupervised babies. In fact, the difference is too great. I have always stated that there is no way by which an exact statistical comparison can be made. The above figures are given simply to show that the work which the Health Department is doing through its nurses is saving a great many lives. Of this fact there cannot be the slightest doubt. If every birth were reported, we could come nearer to making a statistical comparison, but even then accuracy would not be attainable, on account of difficulties inherent to the case.

After all, we have a way of showing the value of this work which is more reliable than any other. We are able to point to scores of cases in which there can be no shadow of a doubt but that the work of the Department, through its nurses, saved the lives of babies who would otherwise have died.

Infantile Diarrhea.

Since 1907 our milk supply has been on such an excellent basis from a sanitary standpoint that bad milk has been negligible as a cause of fatal infantile diarrhea. In 1910 we began our work of having nurses visit the mothers of babies who we believed to be especially handicapped and give instructions in the care of these babies. This work has steadily grown; the number of nurses has been increased and hence the number of mothers visited has also increased.

Back in 1911 I began to hold the belief that infection played the most prominent part in the epidemiology of infantile diarrhea, and a distinct epidemic of this disease in the fall of that year (see previous reports) confirmed me in this belief. It was but another step to see that, on the above hypothesis, proper attention to the diapers of the babies is of the utmost importance in limiting the spread of this infection. Furthermore, it was plain that we could not get results unless the fecal dejecta of all babies are looked out for, since, by every analogy, we must believe that there are carriers to be considered, just as in typhoid fever. From that time on, our nurses have been told to give the greatest possible emphasis on care of the diapers in every home in which they go to look out for a baby.

The first table in my own present report gives the death rate from infantile diarrhea for every year from 1907 to 1913, inclusive. From 1907 to 1911, inclusive, the average annual death rate from infantile diarrhea was 134.8 per 100,000 population. For the past two years (1912 and 1913), during which our nurses have impressed on the mothers the importance of care of the babies' diapers, the average annual mortality has been 92.9 per 100,000. a decrease of 31 per cent. While two years results are not conclusive, nevertheless the figures just given are strongly suggestive, to say the least. The lowest rate during the first period was 122.0, while the rate in 1912 was 101.0 and in 1913 it was 84.8.

Sanitary Inspections.

As stated in all of my recent annual reports, I do not at all agree with those sanitarians who regard the abatement of ordinary nuisances as having little or no relation to health. Holding this view myself when I returned to Richmond after two years spent in the study of sanitary science in the North, I have gradually come to regard ordinary nuisance as favoring most decidedly the development of certain diseases—not in the way that such things were regarded prior to the time when protection of the public health first became a science, but in a way entirely in accord with the teachings of modern sanitary science—and I have hence come also to regard the abatement of nuisances as a health measure of great practical importance.

The report of the Chief Sanitary Officer and the other sanitary officers of our Department show that a far greater amount of work was done by them in 1913 than in any previous year. Even with our very inadequate force—six men for the entire city of eleven square miles and a population of 132,045—we were able in 1913 to cover a considerable proportion of the city with house-to-house inspections. In the course of this work bad conditions were found which had existed for years.

In two connections especially is this work of real value—in getting all privies in good shape and in getting all stables up to our requirements. I will not discuss the first of these measures, except to say that the number of privies in Richmond has been reduced to about 900, against nearly 4,000 a few years ago. Every one of these 900 privies was inspected during 1913 and wherever any were found not up to our rules these were put in good shape.

Flies.

The importance of flies (especially that kind known as the house fly, and more recently renamed the typhoid fly by Dr. L. O. Howard, Chief of the Bureau of Entomology) as carriers of disease is now so generally recognized that it is unnecessary to enter into any argument on the subject. There is always danger that when any health measure becomes a fad the inevitable exaggerations will go so far as to cause a reaction and consequently actual retardation of the benefits which might otherwise have been forthcoming. In spite of all the sensationalism of the past few years in connection with the house fly and the harm that it does, I believe that this insect is really worse than is yet realized.

Typhoid fever and infantile diarrhea are now known to be conveyed by flies in a large proportion of cases, while it is probable that tuberculosis is occasionally so carried.

The fact that the housefly carries disease need not be argued. The main thing which interests now in this connection is the question as to how we can best fight this pest successfully. This is a big subject—too big to be discussesd in the present report except in the briefest manner.

Knowing that at least 90 per.cent of all houseflies in cities are bred in horse manure, we must insist on proper stable construction, especially must we have the floors impervious, so that the larvae (maggots) cannot burrow into it. We must make proper provision for the storage of horse manure between the times of its removal to the country. We must have the droppings of horses while in the stable swept up at frequent intervals, thus holding down as far as possible the opportunity of adult female flies depositing their eggs in it. We must insist on the removal of the accumulated manure at short intervals and the thorough cleaning of the receptacle at each emptying. We must reduce to a minimum the amount of unprotected organic matter of other kinds (garbage ,for example) in the city. We must kill as many flies as possible, by traps, fly paper of various kinds and swatting.

The Maggot Trap.

So rapidly does the fly increase in hot weather, that it has heretofore seemed that even the most thorough attention to the matters just enumerated would fail to reduce flies to a reasonable minimum. In this connection I may mention a new weapon of value in our campaign against flies. On several occasions our Chief Sanitary Officer, Mr. W. T. Tuck, and I observed large numbers of fly larvae leaving receptacles of manure and getting out onto the ground, whence they rapidly disappeared, having entered the ground. After observing this a number of times it occurred to us that if manure receptacles had in them properly located openings and if a tight receptacle were placed under these openings, such an arrangement would enable us to attack the fly problem in still another way.

Our observations and early experiments demonstrated to us that when manure was stored in a receptacle with openings in the bottom nearly all the maggots which developed in the manure would leave it after a few days and drop through these openings. We found that in all our experiments the maggots regularly left the manure and entered the ground before pupating, provided they could find means for doing so.

On this principle we constructed what we called a maggot trap. This trap consisted of a tight barrel with the bottom knocked out of it and a stout piece of gauze, with a mesh of about one-half an inch, securely fastened to the bottom of the staves. This barrel was propped up on three legs and under it was placed a large galvanized iron tub. Filling such a maggot trap with manure and allowing it to remain open until the manure became fly blown and then covering it with a piece of regular fly gauze, we found that, after a few days the maggots began to drop into the tub, doing so almost entirely by night. Each morning we would find regularly a large number of maggots in the tub underneath the barrel. In every experiment we got thousands of maggots in the tub. The flies which came out of the top of the barrel were kept from escaping by means of the fine wire net, and they finally entered the small fly trap which we placed over a hole in the center of this gauze. In only one instance did we get any considerable number of flies from the top of the barrel. In this case we got 22,000 maggots in the tub and 650 flies at the top. In every other experiment not over sixty flies were caught at the top. Usually the number was much smaller than this.

Believing that this maggot trap constituted an additional weapon of considerable value in our fight against the fly, we did not wait for further experiments before publishing our results. A paper on the subject was written by Mr. Tuck and me and read before the Richmond Academy of Medicine and Surgery on June 24, 1913, and was published in the July (1913) issue of the American Journal of Public Health.

Construction of Stables.

On account of the fact that horse manure furnishes the great breeding place for house flies in cities, supervision over the location, construction and maintenance of stables must be regarded as constituting a health measure of prime importance. In Richmond the City Council has charge of the location of stables. So far as I know no application to construct a stable is ever refused.

Under the power to adopt rules and regulations on all matters relating to health, the Board of Health has adopted such rules and regulations governing the construction and maintenance of stables. These are still very general in character and by no means rigid. The prime requirement of construction relates to the floor, which must be of impervious material, in the stalls and for a distance of four feet back of the stalls, and must drain properly.

Under this requirement a number of concrete floors have been put into stables which formerly had wood or dirt floors. This work was progressing nicely when a number of stable owners combined to resist this rule. They employed counsel, first to appear before the Board of Health, in an effort to have the existing rule amended so as to allow clay floors, their sole argument being that such a floor was better for the horses. The stablemen who took this stand were, with perhaps one exception, men who had not yet put in concrete, while those who had put in concrete expressed themselves as thoroughly satisfied with it.

The cases of the stablemen who refused to comply with our rules were taken up first in Police Court, where fines were imposed in every instance. Appeal was then had to our Hustings Court. Here Judge Richardson, after a hearing lasting two days, confirmed the orders of the lower court, although effort was made on every ground, from the unconstitutionality of the rules and regulations of the Board of Health to the injury done horses by standing on concrete, to reverse the lower court. Judge Richardson deserves the gratitude of the people of Richmond for his decision, which places men, and even women and children, on a higher plane than horses, though, as a matter of fact there was such abundant testimony to the superiority of concrete for the horses themselves that his decision is really in their favor as well. The rule of the Board requires an impervious floor, and the material which best meets this requirement is concrete, but over this may be laid a tight wood floor or a removable wood platform. With proper attention to bedding, there seems to be little question but that the only tenable objection to the rule is the cost of complying with it.

Removal of Manure.

Since the experiments of our Department have shown that maggots will leave the manure when they become full grown and complete their cycle of development into flies in the earth, the manure problem is a very different one to what it has heretofore been considered. It has been believed that weekly removals of manure were all that was needed, since the shortest time that any observer had found the eggs of the house fly to develop into mature insects was eight days. Now, however, we must recognize that not less than twice each week will do, unless the manure is stored either in absolutely tight receptacles between the times removal, or else stored in receptacles constructed on the principle of the maggot trap.

Educational Work.

No new lines of educational work were developed during the year. As in previous years, a great many lectures were given from time to time throughout the year. A number of special articles were written for the press and a great many interviews on important health matters were given. Our exhibit last fall at the State Fair was enlared and improved on. As usual, this exhibit attracted a great deal of attention.

The City Council has rented for this year space for a permanent exhibit of the work of several of the departments of the city government. Three floors in the new building of the Chamber of Commerce, located at Sixth and Main Streets, have been set aside for exhibiting the manufacturing industries of Richmond, and the space rented by the city will have exhibits of the following departments: Schools, Gas, Water, Electricity, Finance and Health. This will give our Department the means of showing some of the most important phases of our work and, especially, of showing the value of this work to the City of Richmond.

The advantages of this will be great. On last analysis it will always be found that liberal support will be given to the Health Department if the value of this work is known. I have always found that back of failure to give such support there lies ignorance of what can be accomplished. Hence the logical means of getting what we ask for is to make very plain the benefits which will come from it. How to do this is by no means easy. Council Committees are very busy and at their meetings have to listen to a multitude of requests from city departments, from representatives of many outside organizations and from many individuals. Hence there is no opportunity to go into anything but the briefest possible account of what is wanted and why. Public sentiment is, after all, the most effective argument which can be advanced in favor of liberal support of any project. As a creditable exhibit of the activities of the Health Department will do much to bring about recognition of the value of our work, it will help create the public sentiment which is needed.

One of the chief needs in our Department is a publicity director. All the regular officers have so many duties of other kinds to attend to that they cannot give to this subject the time or the thought which should be given. Publicity in public health work is today recognized as just as important as is publicity in connection with commercal concerns. Advertising is necessary in business affairs, and publicity of the right kind is essential for the education of the people in matters of public health. Many State health departments, as well as the health departments of a number of large cities, have connected with them one or more men whose place it is to keep themselves informed as to every detail of the work of these departments and to put this in attractive shape for public consumption. The value of this work is enormous. The people who are thus brought to understand what their health department is doing and what it is capable of doing if more liberally supported will not only co-operate with it and thus facilitate the work, but they will also aid greatly in getting support for further expansion of the work.

Conclusion.

I believe that the foregoing report furnishes convincing evidence of the fact that the work of the Richmond Health Department was even more efficient during 1913 than in any preceding year. The facts which I have discussed in the first part of this report sum up fairly well the most important matters whereon I base this statement.

During the year there were several occasions on which results were absolutely dependent upon thorough understanding and co-operation between the Board of Health and the Chief Health Officer. On every occasion of this kind the harmony which has always prevailed under ordinary conditions was further emphasized. This resulted not only in the successful termination of the special matter in hand, but it also resulted in establishing even more cordial relations than before. I must take this occasion to repeat the statement that without this thorough mutual undersanding between the Board of Health and the Chief Health Officer it would be impossible for the Health Department to accomplish what it has done in the past seven and a half years.

The officers of the Health Department have done their work well. I have not in this report commended them individually as in former years. This means only that all have discharged their duties with credit to themselves and to the benefit of our city. I am certain that in no department of the city government are the men more thoroughly devoted to their work or more efficient in discharging it. Moreover, many of them are steadily acquiring a broader outlook than is demanded in the carrying out of their immediate duties. This makes them in every way more efficient. It will be the aim of all of us to try and make 1914 a year of even better accomplishments.

Respectfully submitted,

E. C. LEVY, M. D.,
Chief Health Officer.

FINANCIAL STATEMENT—SUMMARY.

Account.	Appropriation.	Expended.	Balance.	
Pay roll	$26,324 98	$26,317 95	$ 7 03	
Expense	19,500 00	6,199 34		
Sanitary improvement of milk supply		5,113 82		
Special vaccination		2,800 61		
Tuberculosis campaign		3,749 02		
Educational campaign		337 48		
Total	$45,824 98	$44,518 22	$1,306 76	
Total appropriations as above				$45,824 98

Reimbursements:		
Unexpended balances as above	$1.306 76	
Food permits	442 00	
For care of smallpox patient for town of Ginter Park	24 07	
Total reimbursements		$1,772 83
Net cost of maintenance of the Health Department for the year 1913		$44,052 15

PAY ROLL.

Chief Health Officer	At	$3,000 00	per annum	$ 3,000 00
Medical Inspector	At	2,000 00	per annum	2,000 00
*Registrar of Vital Statistics	At	1,350 00	per annum	1,212 50
†Clerk	At	900 00	per annum	892 96
Bacteriologist	At	900 00	per annum	900 00
Stenographer	At	600 00	per annum	600 00
Fumigator	At	900 00	per annum	900 00
*Plumbing Inspector	At	1,600 00	per annum	1,469 45
*Assistant Plumbing Inspector	At	1,200 00	per annum	1,069 44
Food Inspector	At	1,200 00	per annum	1,200 00
Assistant Food Inspector	At	900 00	per annum	900 00
Chief Sanitary Officer	At	1,200 00	per annum	1,200 00
*Sanitary Officer, First District	At	1,000 00	per annum	934 72
*Sanitary Officer, Second District	At	1,000 00	per annum	934 72
*Sanitary Officer, Third District	At	1,000 00	per annum	934 72
*Sanitary Officer, Fourth District	At	1,000 00	per annum	934 72
*Sanitary Officer, Fifth District	At	1,000 00	per annum	934 72
District Physician, First District	At	900 00	per annum	900 00
District Physican, Second District	At	900 00	per annum	900 00
District Physician, Third District	At	900 00	per annum	900 00
District Physician, Fourth District	At	900 00	per annum	900 00
District Physician, Fifth District	At	900 00	per annum	900 00
District Physician, Sixth District	At	900 00	per annum	900 00
District Physician, Seventh District	At	900 00	per annum	900 00
Total Disbursements for Pay Roll				$26,317 95

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*Increase in salary.

†Loss of time in changing employees.

Expense.

Advertising	$ 46 90
Addressograph	9 71
Binding and ruling	85 68
Badges for officers	3 10
Board and hire of horse	46 00
Directory	6 00
Disinfectants	106 25
Drayage, freight and express	60 68
Electric batteries and lamps	15 67
Electrotypes	9 01
Electric fans	31 35
Extra stenographer	25 00
Furniture	69 01

Insurance on auto	49 95	
Laboratory fixtures	43 50	
Laboratory supplies	239 10	
Motorcycle supplies	14 88	
Medicine case	8 00	
Miscellaneous	40	
Postage	366 92	
Printing	383 37	
New automobile, repairs, storage and supplies	1,226 72	
Repairs to night soil carts	15 86	
Repairs to typewriter	15	
Stationery	113 07	
Typewriter repairs and supplies	14 50	
Telephones	138 70	
Towel and soap supply	12 00	
Traveling expenses Chief Sanitary Officer to Washington, D. C.	7 00	
Traveling expenses Chief Health Officer to Colorado Springs	146 70	
Traveling expenses Plumbing Inspector to Louisville, Ky	75 00	
Wood alcohol and peppermint	5 00	
Infant Work:		
Handbags for use of nurses	6 76	
Instruments, scales, etc	12 40	
Salary of nurses	2,805 00	
Total disbursement for expense		$6,199 34

Sanitary Improvement of Milk Supply.

Automobile and supplies	$ 542 25	
Bacteriological examination of milk	600 00	
Board of horse	286 10	
Doctor for horse	19 00	
Help in laboratory	237 50	
Repairs and supplies for bicycle	8 50	
Repairs to buggy and harness, and shoeing horse	28 10	
Services of Dairy Inspector	1,425 00	
Services of Assistant Dairy Inspector	945 76	
Traveling expenses of Dairy Inspector	1,016 10	
Thermometers, etc.	5 51	
Total disbursement for sanitary improvement of milk supply		$5,113 82

Special Vaccination.

Diphtheria antitoxin	$ 678 75	
Dr. Isaac Curd	205 23	
Dr. P. D. Lipscomb	165 00	
Dr. W. J. West	104 00	
Food for scarlet fever quarantine	68 46	
Food at Smallpox Hospital	282 48	
Fumigating outfits	104 35	
Fuel at Smallpox Hospital	8 25	
Guard and help at Smallpox Hospital	466 15	
Hire of horse	112 60	
Household supplies at Smallpox Hospital	8 98	
Instruments for intubating	25 00	
Medicines at Smallpox Hospital	8 90	
Repairs to wagon	2 00	
Repairs to pump and well at Smallpox Hospital	59 33	
Services of vaccinators	49 38	
Telephone at Smallpox Hospital	78 00	
Vaccine virus	373 75	
Total disbursement for special vaccination		$2,800 61

Tuberculosis Campaign.

Disinfectants	$ 400 00	
Drugs for dispensaries	213 70	
Electric lights	12 00	
Fuel for dispensaries	12 50	
Janitor and help hired	122 50	
Milk	170 00	
Paper napkins	65 00	
Rent of Third Street Dispensary	240 00	
Repairs at Dispensary	6 70	
Salary of nurses	1,650 00	
Services of Chiefs of Clinics	720 00	
Sputum cups and holders	119 02	
Supplies for Dispensaries	17 60	
Total disbursement for tuberculosis campaign		3,749 02

Educational Campaign.

Books	$ 13 00	
Exhibit at fair	176 09	
Fly traps	49 16	
Photographs	29 88	
Pictures, frames and framing	17 83	
Printing	51 52	
Total disbursement for educational campaign		$ 337 48

E. L. HASKER,

Registrar.

TABLES

AND

SUBSIDIARY REPORTS

TABLE

Showing Number of Marriage Licenses

MONTH	1904		1905		1906		1907		1908
	White	Colored	White	Colored	White	Colored	White	Colored	White
January	22	15	41	31	35	24	41	24	44
February	35	32	31	18	41	32	40	27	43
March	25	32	35	18	22	29	35	29	34
1st Quarter. .	82	79	107	67	98	85	116	80	121
April	57	28	56	41	73	46	71	56	78
May	34	18	32	27	20	26	41	32	35
June	65	39	69	38	62	45	76	47	80
2d Quarter...	156	85	157	106	155	117	188	135	193
July	40	30	40	31	36	23	52	39	32
August	30	37	46	42	26	32	36	37	31
September ...	44	42	49	31	38	39	60	43	44
3d Quarter....	114	109	135	104	100	94	148	119	107
October	62	38	64	30	56	35	78	53	63
November ...	58	30	75	39	67	36	91	41	59
December ...	61	51	69	53	98	65	70	67	71
4th Quarter	181	119	208	122	221	136	239	161	193
Total.....	533	392	607	399	574	432	691	495	614
Yearly totals.	925		1,006		1,006		1,186		

No. 1.

Issued **1904** *to* **1913,** *Inclusive.*

1908	1909		1910		1911		1912		1913	
Colored	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored
34	37	28	42	30	52	42	58	36	48	51
22	45	51	42	36	53	45	55	32	53	48
24	37	72	50	54	37	35	36	59	61	61
80	119	151	134	120	142	122	149	127	162	160
57	79	71	68	62	84	59	82	85	66	71
28	36	27	54	41	35	47	56	50	49	65
50	54	57	80	82	72	49	98	79	99	71
135	169	155	202	185	191	155	236	214	214	207
47	49	45	55	54	51	53	60	65	65	54
34	40	40	48	49	58	44	65	59	54	52
51	45	54	58	64	60	46	70	84	74	75
132	134	139	161	167	169	143	195	208	193	181
35	64	41	84	57	90	58	90	50	91	60
49	68	60	88	78	87	53	91	84	107	64
77	91	73	81	69	101	90	102	125	95	89
161	223	174	253	204	278	211	283	259	303	213
508	645	619	750	676	780	631	863	808	872	761
1,122	1,264		1,426		1,411		1,671		1,633	

TABLE No. 2.

Births Reported During 1913, *with Sex and Color.**

MONTH	WHITE		COLORED		TOTAL		GRAND TOTAL
	Male	Female	Male	Female	Male	Female	
January	96	63	43	33	139	96	235
February	64	73	47	39	111	112	223
March	85	62	51	49	136	111	247
April	86	79	39	74	125	153	278
May	63	55	49	38	112	93	205
June	79	82	43	63	122	145	267
July	71	73	53	71	124	144	268
August	99	76	52	51	151	127	278
September	91	89	47	63	138	152	290
October	105	81	54	63	159	144	303
November	80	81	48	47	128	128	256
December	99	86	47	53	146	139	285
Total	1,018	900	573	644	1,591	1,544	3,135

*Stillbirths are not included in any of the tables of births or deaths.

TABLE No. 2A.

Giving Birth Rate During 1913, *by Color.*

COLOR	POPULATION (Official Estimate U. S. Bureau of the Census)	NUMBER OF BIRTHS			Birth Rate Per 1,000 Inhabitants
		Male	Female	Total	
White	83,509	1,018	900	1,918	22.97
Colored	48,536	573	644	1,217	25.07
Total	132,045	1,591	1,544	3,135	23.74

TABLE No. 3.

Attendants at Birth.

By Whom Reported	WHITE		COLORED		TOTAL		GRAND TOTAL
	Male	Female	Male	Female	Male	Female	
Physician	831	719	156	175	987	994	1,981
Midwife	187	181	417	469	604	550	1,154
Total	1,018	900	573	644	1,591	1,544	3,135

TABLE No. 4.

Stillbirths by Months.

MONTH	WHITE	COLORED	TOTAL
January	3	17	20
February	6	18	24
March	3	9	12
April	2	13	15
May	8	20	28
June	7	19	26
July	11	19	30
August	10	13	23
September	8	8	16
October	9	18	27
November	5	13	18
December	13	18	31
Total	85	185	270

TABLE No. 5.

Stillbirths by Years, Since 1904.

YEAR	WHITE	COLORED	TOTAL
1904	74	147	221
1905	59	130	189
1906	70	130	200
1907	90	169	259
1908	109	165	274
1909	76	195	271
1910	95	189	284
1911	87	186	273
1912	111	192	303
1913	85	185	270

TABLE No. 6.

Stillbirths Viewed by Coroner.

SEX	White	Colored	Unknown Color	Total
Male	121	179	1	301
Female	44	118	1	163
Unknown sex	0	0	1	1
Total	165	297	3	465

SEX	White	Colored	Unknown Color	Total
Male	0	3	1	4
Female	2	2	0	4
Unknown sex	0	0	3	3

Still Births Viewed by Coroner.

SEX	White	Colored	Unknown Color	Total
Male	2	20	1	23
Female	4	16	0	20
Unknown sex	0	0	1	1
Total	6	36	2	44

TABLE No. 7.

Deaths for the Year Ending December 31, 1913, *Classified by Color and Sex, and Whether Residents or Non-Residents of Richmond.**

	Residents of Richmond			Non-Residents of Richmond			Total Number of Deaths, Including Non-Residents		
SEX	White	Col'd	Total	White	Col'd	Total	White	Col'd	Total
Male	660	598	1,258	131	57	188	791	655	1,446
Female	540	623	1,163	80	29	109	620	652	1,272
Total	1,200	1,221	2,421	211	86	297	1,411	1,307	2,718

*Stillbirths are not included in any of the tables of births or deaths.

TABLE No. 8.

Giving Death Rate, with Non-Residents Included and Excluded.

COLOR	Population (U. S. Bureau of the Census)	Actual Number of Deaths		Death Rate per 1,000	
		Non-Residents included.	Non-Residents excluded.	Non-Residents included.	dents ex- Non-Resi- cluded.
White	83,509	1,411	1,200	16.90	14.37
Colored	48,536	1,307	1,221	26.93	25.16
Total	132,045	2,718	2,421	20.58	18.33

TABLE NO. 9.

POPULATION OF RICHMOND, VIRGINIA, 1870-1914.

(Official Estimates of the U. S. Bureau of the Census.)

YEAR	White	Col'd	Total	YEAR	White	Col'd	Total
1870*	27,928	23,110	51,038	1890*	49,034	32,354	81,388
1871	28,712	23,582	52,294	1891	49,410	32,344	81,754
1872	29,496	24,054	53,550	1892	49,786	32,334	82,120
1873	30,280	24,526	54,806	1893	50,162	32,324	82,486
1874	31,064	23,998	56,062	1894	50,538	32,314	82,852
1875	31,846	25,470	57,313	1895	50,914	32,304	83,218
1876	32,632	25,942	58,574	1896	51,290	32,294	83,584
1877	33,416	26,414	59,830	1897	51,666	32,284	83,950
1878	34,200	26,886	61,086	1898	52,042	32,274	84,316
1879	34,984	27,358	62,342	1899	52,418	32,264	84,682
1880*	35,765	27,835	63,600	1900†	52,879	32,285	85,164
1881	37,092	28,287	65,379	1901	53,850	32,690	86,540
1882	38,419	28,739	67,158	1902	54,821	33,095	87,916
1883	39,746	29,191	68,937	1903	55,792	33,500	89,292
1884	41,073	29,643	70,716	1904	56,763	33,905	90,668
1885	42,400	30,095	72,495	1905	57,734	34,310	92,044
1886	43,727	30,547	74,274	1906	58,706	34,715	93,421
1887	45,054	30,999	76,053	1907†	70,429	42,984	113,413
1888	46,381	31,451	77,832	1908	71,401	43,389	114,790
1889	47,708	31,903	79,611	1909	72,373	43,794	116,167
				1910‡	80,593	47,821	127,914
				1911	81,565	47,726	129,291
				1912	82,537	48,131	130,668
				1913	83,509	48,536	132,045
				1914	84,481	48,941	133,422

*Census year.

†The population given for the Census years 1900 and 1910 are midyear (July 1st) estimates. The actual Census of 1900 gave a population of 85,050; that of 1910, a population of 127,628 as of June 1st and April 15th, respectively. The midyear estimates for these years will be used by the Census Bureau in calculating its official vital statistics rates for these two census years.

‡Annexation added a population of 18,615 on December 6, 1906, and a population of 10,370 on April 15, 1910.

Note. The official estimate of population for 1914 is added to the above table to facilitate the calculation of rates for a series of years in which that year is included.

A bulletin of the U. S. Bureau of the Census issued on March 15, 1914, gives new estimates of population for 1910, 1911, 1912, 1913 and 1914, which differ decidedly from those previously published. It was not, of course, feasible to revise all rates and tables at this late date. The new figures are all higher than the old. This means that, where the difference is sufficient to make any change at all, such change gives us lower rates than those given in the present report.

The revised rates may be calculated by using the new official estimates of population, which are as follows: "SEE PAGE 79"

TABLE No. 10.

Civil Condition of Decedents.

CIVIL CONDITION	WHITE		COLORED		TOTAL
	Male	Female	Male	Female	
Single	349	239	359	297	1,244
Married	310	171	217	166	864
Widowed	117	208	65	186	576
Divorced	2	2	1	1	6
Unknown	13	0	13	2	28
Total	791	620	655	652	2,718

TABLE No. 11.

Nativity of Decedents.

NATIVITY	WHITE		COLORED		TOTAL
	Male	Female	Male	Female	
Virginia	621	494	554	600	2,269
Other parts of United States	87	85	77	39	288
Canada	2	0	0	0	2
England	8	2	0	0	10
Europe	0	1	0	0	1
Germany	11	14	0	0	25
Hungary	0	1	0	0	1
Ireland	16	10	0	0	26
Italy	7	2	0	0	9
Nova Scotia	1	0	0	0	1
Prussia	3	1	0	0	4
Russia	5	3	0	0	8
Scotland	1	2	0	0	3
Sweden	2	0	0	0	2
Switzerland	1	0	0	0	1
Syria	1	0	0	0	1
West Indies	0	0	0	1	1
Unknown	25	5	24	12	66
Total	791	620	655	652	2,718

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TABLE No. 12.

Revised Estimate of Population of Richmond.

YEAR	White	Colored	Total
1910	81,108	46,881	127,989
1911	82,205	47,516	129,721
1912	83,303	48,150	131,453
1913	84,401	48,784	133,185
1914	85,498	49,419	134,917

TABLE NO. 13.

By Whom Certified.

BY WHOM CERTIFIED	WHITE		COLORED		TOTAL
	Male	Female	Male	Female	
Physician	669	575	507	558	2,309
Coroner	122	45	148	93	408
Board of Health	0	0	0	1	1
Total	791	620	655	652	2,718

TABLE NO. 14.

Giving Mortality for Each Month of the Year, and the Relative Mortality of Each Month Reduced to a Standard of 100.

MONTH	WHITE		COLORED		TOTAL	Relative Mortality*
	Male	Female	Male	Female		
January	72	48	64	67	251	109
February	92	53	49	41	235	112
March	76	50	63	54	243	105
April	62	48	61	49	220	98
May	61	44	52	60	217	94
June	68	63	73	73	277	124
July	66	49	60	52	227	98
August	51	50	54	58	213	92
September	60	38	54	46	198	89
October	62	60	43	41	206	89
November	51	50	39	63	203	91
December	70	67	43	48	228	99
Total	791	620	655	652	2,718	1,200

*The relative mortality for each month as calculated in this table takes into account the actual number of days in each month.

TABLE No. 15.

Showing the Number of Deaths, Monthly, of the Two Races, from 1904 *to* 1913, *Inclusive.*

MONTH	1904		1905		1906		1907		1908		1909		1910		1911		1912		1913	
	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored
January	78	73	70	55	78	77	117	135	126	142	95	90	163	131	107	114	123	136	120	131
February	75	97	77	94	71	76	105	121	107	128	87	89	124	108	110	88	125	107	145	90
March	102	113	81	92	83	81	117	141	110	113	110	128	113	105	109	140	139	114	126	117
April	72	79	59	82	76	93	112	113	97	90	102	111	108	110	106	100	111	108	110	110
May	64	82	47	64	78	73	106	101	111	107	110	105	123	128	111	119	102	91	105	112
June	73	114	98	109	97	110	128	131	113	127	123	90	143	146	139	111	91	99	131	146
July	98	106	77	92	87	92	115	141	113	106	115	114	129	129	136	137	107	152	115	112
August	62	66	58	65	70	83	89	97	112	93	77	99	91	124	119	101	116	106	101	112
September	68	76	66	58	88	71	97	90	91	75	73	82	116	98	93	105	117	113	98	100
October	62	83	67	51	79	91	102	113	92	78	97	107	95	113	112	117	111	108	122	84
November	55	64	60	62	73	82	76	79	91	82	100	98	116	115	118	110	98	110	101	102
December	49	65	60	73	111	88	125	101	99	83	111	91	150	109	117	99	132	99	137	91
Total	858	1,018	820	897	991	1,017	1,289	1,363	1,262	1,224	1,200	1,204	1,471	1,416	1,377	1,341	1,372	1,343	1,411	1,307
Grand Total.	1,876*		1,717*		2,008†		2,652†		2,486†		2,404†		2,887†		2,718†		2,715†		2,718†	

*Nonresidents not included.

†Nonresidents (178 in 1906; 155 in 1907; 167 in 1908; 219 in 1909; 331 in 1910; 267 in 1911; 290 in 1912, and 297 in 1913). Eliminating these, as in previous years, the total deaths were 1,980 in 1906; 2,497 in 1907; 2,319 in 1908; 2,185 in 1909; 2,556 in 1910; 2,451 in 1911; 2,425 in 1912, and 2,421 in 1913.

TABLE No. 16.

Deaths for the Year Ending December 31, 1913, *Classified by Causes, Months, Color and Sex.*

CAUSES OF DEATH	MONTHS												WHITE			COLORED			Grand Total
	Jan.	Feb.	March	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Male	Female	Total	Male	Female	Total	
I.—GENERAL DISEASES																			
1. Typhoid fever	1	1	....	....	3	6	3	3	6	1	1	2	10	8	18	3	6	9	27
6. Measles	7	6	8	3	1	....	....	....	....	....	....	....	8	7	15	4	6	10	25
7. Scarlet fever	....	1	....	....	....	....	....	....	....	1	1	2	1	3	4	0	1	1	5
8. Whooping cough	....	....	....	....	2	....	2	8	....	1	1	3	5	4	9	4	4	8	17
9. Diphtheria and croup	....	2	....	....	....	....	....	1	....	3	1	1	4	4	8	0	0	0	8
10. Influenza	8	7	4	3	3	....	....	....	....	....	2	3	4	10	14	9	7	16	30
13. Cholera nostras	....	....	....	1	....	....	....	....	....	....	....	....	0	0	0	1	0	1	1
14. Dysentery	....	....	1	1	....	8	2	2	5	1	....	1	4	4	8	3	10	13	21
18. Erysipelas	1	....	....	....	1	....	....	....	....	2	1	....	3	1	4	1	0	1	5
20. Purulent infection and septicemia	1	3	1	1	1	....	....	....	....	....	1	....	3	2	5	1	2	3	8
24. Tetanus	....	....	1	2	1	....	1	....	....	....	....	2	4	1	5	2	0	2	7
26. Pellagra	....	....	2	....	....	....	1	1	3	2	....	....	5	2	7	0	2	2	9
28. Tuberculosis of the lungs	16	14	23	25	12	20	23	14	19	19	13	16	42	32	74	69	71	140	214
29. Acute miliary tuberculosis	1	1	....	2	....	1	....	1	....	....	1	2	2	0	2	2	5	7	9
30. Tuberculosis meningitis	1	....	2	5	3	....	1	4	3	....	1	2	9	6	15	2	5	7	22
31. Abdominal tuberculosis	....	2	3	1	4	....	1	1	1	3	1	1	9	5	14	1	3	4	18
32 Potts's disease	....	....	1	2	1	....	....	....	....	1	....	....	0	0	0	4	1	5	5
34. Tuberculosis of other organs	....	....	1	....	1	....	....	....	1	....	....	....	1	1	2	1	0	1	3
35. Disseminated tuberculosis	....	1	....	....	....	....	1	....	....	....	1	....	1	2	3	0	0	0	3
36. Rickets	2	....	....	....	....	....	....	1	....	1	....	....	0	2	2	0	2	2	4
37. Syphilis	3	2	....	5	3	4	1	4	5	7	3	1	9	4	13	16	9	25	38
38. Gonococcus infection	....	....	....	1	....	....	....	....	....	....	....	....	0	0	0	1	0	1	1
39. Cancer of the buccal cavity	....	....	....	....	....	....	....	....	1	1	....	1	3	0	3	0	0	0	3
40. Cancer of the stomach and liver	4	3	4	2	3	5	2	4	1	1	3	3	10	13	23	3	9	12	35
41. Cancer of the peritoneum, intestines, rectum	....	2	....	....	2	1	2	1	3	5	....	1	6	8	14	1	2	3	17

42. Cancer of the female genital organs	4	....	3	1	1	3	2	2	....	....	3	2	0	11	11	0	10	10	21
43. Cancer of the breast	....	1	1	3	1	2	....	1	1	3	....	2	1	9	10	0	5	5	15
44. Cancer of the skin	....	....	1	1	2	....	....	1	....	1	....	1	3	3	6	0	1	1	7
45. Cancer of other or unspecified organs	....	1	4	2	3	2	1	....	1	....	2	1	13	1	14	2	1	3	17
46. Other tumors (female genital excepted	....	....	1	1	....	....	....	....	....	....	....	....	0	0	0	0	2	2	2
47. Acute articular rheumatism	2	....	2	....	2	....	2	1	....	....	1	1	3	2	5	2	4	6	11
48. Chronic rheumatism and gout	2	....	....	....	....	....	1	1	....	....	....	1	0	3	3	0	2	2	5
49. Scurvy	....	....	....	....	....	1	1	1	....	....	....	1	2	0	2	1	1	2	4
50. Diabetes	2	1	2	....	....	2	1	2	1	....	4	2	7	6	13	3	1	4	17
51. Exophthalmic goitre	....	....	1	....	....	....	....	....	....	....	1	....	0	1	1	0	1	1	2
53. Leuchaemia	....	....	....	1	1	....	....	....	....	1	....	....	2	0	2	0	1	1	3
54. Anaemia, chlorosis	....	1	1	....	....	....	1	....	1	1	....	....	2	1	3	1	1	2	5
55. Other general diseases	....	....	....	....	....	1	1	....	....	....	....	....	1	0	1	1	0	1	2
56. Alcoholism (acute or chronic)	2	....	....	3	1	2	....	....	....	....	....	3	7	0	7	4	0	4	11
59. Other chronic poisonings	1	....	....	1	....	....	....	....	1	....	....	....	1	2	3	0	0	0	3
II.—DISEASES OF THE NERVOUS SYSTEM																			
60. Encephalitis	1	....	....	....	....	....	....	....	....	1	....	....	1	0	1	1	0	1	2
61. Simple meningitis	2	1	....	2	....	1	4	4	....	....	4	1	6	4	10	7	2	9	19
62. Locomotor ataxia	1	....	....	....	....	....	1	1	2	1	2	2	8	2	10	0	0	0	10
63. Other diseases of the spinal cord	2	1	2	....	....	1	1	....	1	1	1	2	3	5	8	2	2	4	12
64. Cerebral hemorrhage, apoplexy	13	15	18	20	17	19	16	11	15	17	11	14	51	35	86	41	59	100	186
65. Softening of the brain	....	....	....	....	2	1	2	1	....	....	....	....	2	4	6	0	0	0	6
66. Paralysis without specified cause	....	....	....	1	2	1	1	2	....	....	....	....	2	1	3	1	3	4	7
67. General paralysis of the insane	....	....	....	1	....	....	1	....	....	....	1	....	1	1	2	0	1	1	3
68. Other forms of mental alienation	....	....	2	....	....	....	....	....	....	....	....	....	2	0	2	0	0	0	2
69. Epilepsy	2	1	....	....	....	....	....	1	....	....	1	2	1	4	5	0	2	2	7
71. Convulsions of infants	6	2	....	1	2	2	3	2	....	1	....	....	5	2	7	8	4	12	19
73. Hysteria	....	....	....	....	....	....	....	....	....	....	....	1	1	0	1	0	0	0	1
74. Other diseases of the nervous system	4	3	....	....	1	1	....	....	2	2	2	2	8	4	12	3	2	5	17
76. Diseases of the ears	....	2	1	2	....	1	1	....	....	....	....	....	5	0	5	2	0	2	7

TABLE No. 16—CONTINUED.

CAUSES OF DEATH	MONTHS												WHITE			COLORED			Grand Total
	Jan.	Feb.	March	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Male	Female	Total	Male	Female	Total	
III.—DISEASES OF THE CIRCULATORY SYSTEM																			
77. Pericarditis	....	....	....	1	....	1	....	....	1	....	....	1	0	2	2	0	2	2	4
78. Acute endocarditis	....	1	2	....	1	1	....	....	....	....	1	....	0	1	1	3	2	5	6
79. Organic diseases of the heart	37	28	24	26	20	20	21	22	14	19	20	28	85	76	161	60	58	118	279
80. Angina pectoris	....	2	1	....	2	3	....	....	....	....	....	1	4	4	8	1	0	1	9
81. Diseases of the arteries, atheroma, aneurism, etc.	2	2	1	2	4	1	....	2	2	....	2	2	7	3	10	8	2	10	20
82. Embolism and thrombosis	1	2	1	....	1	1	1	....	....	2	1	1	1	4	5	3	3	6	11
84. Diseases of the lymphatic system	....	1	....	....	....	....	....	....	....	1	....	....	1	1	2	0	0	0	2
IV.—DISEASES OF THE RESPIRATORY SYSTEM																			
86. Diseases of the nasal fossae	....	....	....	1	....	....	....	....	....	....	....	....	1	0	1	0	0	0	1
87. Diseases of the larynx	....	....	....	....	....	....	....	....	....	....	....	1	0	0	0	0	1	1	1
88. Diseases of the thryeoid body	....	....	....	....	....	1	....	....	....	....	....	....	0	1	1	0	0	0	1
89. Acute bronchitis	3	8	6	1	4	....	4	1	2	3	1	7	8	2	10	18	12	30	40
90. Chronic bronchitis	4	1	1	1	....	1	....	4	3	....	1	2	5	4	9	3	6	9	18
91. Broncho-pneumonia	12	12	10	7	5	7	3	7	6	3	10	12	9	12	21	36	37	73	94
92. Pneumonia	16	19	18	9	6	5	2	3	....	9	3	12	25	18	43	29	30	59	102
93. Pleurisy	....	....	....	....	....	1	2	....	....	....	1	....	1	0	1	1	2	3	4
94. Pulmonary congestion, pulmonary apoplexy	4	3	4	....	3	6	1	2	2	4	2	1	10	4	14	7	11	18	32
96. Asthma	....	....	1	1	1	....	....	2	....	....	....	....	0	0	0	3	2	5	5
98. Other respiratory diseases (tuberculosis excepted)	....	1	1	....	1	1	1	....	....	3	....	2	3	2	5	4	1	5	10

V.—DISEASES OF THE DIGESTIVE SYSTEM																			
99. Diseases of the mouth and adnexa	....	....	....	1	....	1	1	1	....	....	....	....	0	1	1	2	1	3	4
100. Diseases of the pharanx	1	....	....	....	....	....	....	....	....	1	....	....	0	0	0	0	2	2	2
101. Diseases of the oesophagus	....	....	....	....	....	....	....	....	....	1	1	....	1	1	2	0	0	0	2
102. Ulcer of the stomach	2	2	1	....	1	3	1	....	1	1	....	1	6	0	6	6	1	7	13
103. Other diseases of the stomach (cancer excepted)	1	2	2	2	1	4	3	1	2	1	....	....	3	5	8	4	7	11	19
104. Diarrhea and enteritis (under 2 years)	4	1	1	2	14	31	17	14	16	7	4	1	34	24	58	30	24	54	112
105. Diarrhea and enteritis (2 years and over)	3	4	3	2	1	7	6	2	7	2	4	....	10	12	22	7	12	19	41
107. Intestinal parasites	1	....	....	....	....	....	....	....	....	....	....	....	0	0	0	1	0	1	1
108. Appendicitis and typhlitis	1	2	4	3	2	2	2	4	4	3	....	3	17	8	25	3	2	5	30
109. Hernias, intestinal obstructions	4	4	2	2	....	1	2	2	1	3	3	2	10	8	18	6	2	8	26
110. Other diseases of the intestine	1	....	....	....	1	1	1	....	1	1	....	1	2	0	2	4	1	5	7
113. Cirrhosis of the liver	3	1	3	....	5	2	3	4	1	2	2	6	18	2	20	7	5	12	32
114. Biliary calculi	1	....	1	2	....	....	1	....	1	2	1	1	3	7	10	0	0	0	10
115. Other diseases of the liver	....	1	....	3	1	2	1	....	1	1	1	....	5	4	9	1	1	2	11
117. Simple peritonitis (nonpuerperal)	1	....	1	....	1	1	....	....	....	....	....	....	0	0	0	1	3	4	4
118. Other digestive diseases (except cancer, tuberculosis)	....	....	....	....	1	....	1	....	....	....	....	1	1	1	2	1	0	1	3
VI.—DISEASES OF THE GENITO-URINARY SYSTEM																			
119. Acute nephritis	3	1	2	3	5	4	3	2	3	2	7	4	7	9	16	10	13	23	39
120. Bright's disease	15	24	14	17	16	18	13	15	14	20	31	24	71	68	139	45	37	82	221
122. Other diseases of the kidneys and adnexa	....	1	1	1	1	3	2	1	....	1	....	....	4	5	9	2	0	2	11
123. Calculi of the urinary passages	....	2	....	....	....	....	....	....	....	....	1	....	2	0	2	0	1	1	3
124. Diseases of the bladder	1	....	....	....	....	....	....	....	....	....	....	....	1	0	1	0	0	0	1
125. Other diseases of the urethra, urinary abscess, etc	....	....	....	....	1	....	....	1	....	1	....	....	2	0	2	1	0	1	3
126. Diseases of the prostate	....	1	4	....	1	3	....	3	....	....	1	2	10	0	10	5	0	5	15
127. Nonvenereal diseases of the male genital organs	....	....	....	....	....	....	1	....	....	....	....	....	1	0	1	0	0	0	1
129. Uterine tumor (noncancerous)	....	....	....	1	....	1	....	....	....	....	2	1	0	0	0	0	5	5	5
130. Diseases of the uterus	....	....	....	1	....	....	2	....	1	....	....	1	0	2	2	0	3	3	5

TABLE No. 16—CONTINUED.

CAUSES OF DEATH	MONTHS												WHITE			COLORED			Grand Total
	Jan.	Feb.	March	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Male	Female	Total	Male	Female	Total	
131. Cysts and other tumors of the ovary	1	....	....	....	....	....	....	....	....	....	....	....	0	0	0	0	1	1	1
132. Other (nonvenereal) diseases of the female genital organs	....	....	....	1	1	4	2	2	....	....	1	....	0	9	9	0	2	2	11
VII.—THE PUERPEREAL STATE																			
134. Accidents of pregnancy	....	....	....	1	1	....	1	....	....	1	....	....	0	4	4	0	0	0	4
135. Puerpereal hemorrhage	....	....	....	....	....	....	....	....	....	....	....	1	0	1	1	0	0	0	1
136. Other accidents of labor	....	1	....	....	1	....	....	....	....	....	....	1	0	0	0	0	3	3	3
137. Puerpereal septicemia	3	1	1	1	1	....	3	1	1	1	....	1	0	4	4	0	10	10	14
138. Puerperal albuminuria and convulsions	1	....	1	2	1	1	2	2	....	1	1	....	0	10	10	0	2	2	12
139. Puerperal phlegmasia alba dolens, embolus	....	....	....	1	....	....	1	....	....	....	1	....	0	2	2	0	1	1	3
VIII.—DISEASES OF THE SKIN																			
142. Gangrene	....	....	1	....	....	1	2	1	....	....	....	1	1	1	2	1	3	4	6
144. Acute abscess	1	....	....	....	....	....	....	....	....	....	....	....	1	0	1	0	0	0	1
145. Other diseases of the skin and adnexa	....	....	....	....	1	....	1	....	....	....	....	....	0	0	0	0	2	2	2
IX.—DISEASES OF THE ORGANS OF LOCOMOTION																			
146. Disease of the bones (tuberculosis excepted)	....	....	....	1	....	....	....	1	....	....	1	....	2	0	2	0	1	1	3
X.—MALFORMATIONS																			
150. Congenital malformations (stillbirths not included)	....	1	6	....	4	4	4	3	....	....	1	....	7	10	17	3	3	6	23

XI.—DISEASES OF EARLY INFANCY																			
151. Congenital debility, icterus and sclerema	14	6	9	12	5	23	14	13	24	20	14	6	40	30	70	41	49	90	160
152. Other diseases peculiar to early infancy	....	3	....	4	....	2	2	1	....	1	2	3	8	5	13	5	0	5	18
XII.—OLD AGE																			
154. Senility	....	....	4	2	1	1	1	1	3	1	1	1	4	9	13	2	1	3	16
XIII.—EXTERNAL CAUSES																			
155. Suicide by poison	1	1	....	....	1	1	1	....	....	....	....	....	2	3	5	0	0	0	5
156. Suicide by asphyxia	2	1	1	....	....	....	....	....	....	1	....	....	3	2	5	0	0	0	5
158. Suicide by drowning	....	....	....	....	....	....	1	....	....	....	....	....	0	0	0	1	0	1	1
159. Suicide by firearms	1	1	1	2	....	2	1	1	....	1	....	1	10	0	10	1	0	1	11
160. Suicide by cutting or piercing instruments	....	1	....	....	....	....	....	....	....	....	....	....	1	0	1	0	0	0	1
161. Suicide by jumping from a high place	....	....	1	....	....	....	1	....	....	....	....	....	2	0	2	0	0	0	2
163. Other suicides	....	....	....	....	....	....	....	....	1	....	....	....	0	0	0	0	1	1	1
165. Other acute poisonings	....	1	1	1	....	....	....	....	....	1	1	....	4	0	4	0	1	1	5
167. Burns	....	....	2	2	2	1	1	1	....	1	4	2	3	4	7	5	4	9	16
168. Absorption of deleterious gases	....	1	2	....	1	1	....	3	2	....	1	1	4	2	6	4	2	6	12
169. Accidental drowning	....	....	2	....	....	4	2	1	1	1	....	....	5	0	5	6	0	6	11
170. Traumatism by firearms	2	1	1	....	....	.	1	....	2	....	1	....	5	0	5	2	1	3	8
171. Traumatism by cutting or piercing instruments	....	....	....	....	....	....	....	....	....	....	....	1	0	0	0	1	0	1	1
172. Traumatism by fall	2	7	2	....	3	4	1	5	1	2	....	4	9	10	19	9	3	12	31
174. Traumatism by machines	....	....	....	....	....	....	....	....	....	....	1	....	0	0	0	1	0	1	1
175. Traumatism by other crushing	3	1	1	3	5	2	3	1	1	2	2	2	13	1	14	11	1	12	26
176. Injuries by animals	....	....	....	....	....	....	....	1	....	....	....	....	0	0	0	1	0	1	1
177. Starvation					2	1	....	1	....	....	....	....	1	0	1	1	2	3	4
179. Effects of heat	....	....	....	....	1	1	2	....	....	....	....	....	0	1	1	2	1	3	4
182. Homicide by firearms	1	1	2	1	1	....	1	....	3	....	1	1	1	0	1	10	1	11	12
183. Homicide by cutting or piercing instruments	1	....	....	....	1	....	1	....	....	....	1	....	1	0	1	3	0	3	4
184. Homicide by other means	4	2	1	1	2	....	....	....	....	....	....	1	1	1	2	6	3	9	11
186-A. Legal electrocution	1	1	2	....	2	3	....	2	....	1	....	2	5	0	5	9	0	9	14
186-B. Other external violence	....	1	1	....	....	....	....	1	1	....	....	....	2	0	2	1	1	2	4

TABLE No. 16—CONTINUED.

CAUSES OF DEATH	MONTHS												WHITE			COLORED			Grand Total
	Jan.	Feb.	March	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Male	Female	Total	Male	Female	Total	
XIV.—ILL-DEFINED DISEASES																			
189. Cause of death not specified or ill-defined	3	3	2	2	4	3	3	3	1	....	5	2	7	0	7	10	14	24	31
Total deaths from all causes.	251	235	243	220	217	277	227	213	198	206	203	228	791	620	1,411	655	652	1,307	2,718

TABLE No. 17.

Deaths for the Year Ending December 31, 1913, Among Non-Residents.

CAUSES OF DEATH	MONTHS												WHITE			COLORED			Grand Total
	Jan.	Feb.	March	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Male	Female	Total	Male	Female	Total	
I.—GENERAL DISEASES																			
1. Typhoid fever	1	....	....	....	1	2	....	2	1	....	....	....	5	1	6	0	1	1	7
6. Measles	1	....	....	....	....	....	....	....	....	....	....	....	1	0	1	0	0	0	1
10. Influenza	....	....	....	....	2	....	....	....	....	....	....	....	0	2	2	0	0	0	2
14. Dysentery	....	....	....	....	....	....	....	1	1	....	....	....	1	0	1	0	1	1	2
20. Purulent infection and septicemia	....	....	....	1	....	....	....	....	....	....	....	....	0	1	1	0	0	0	1
26. Pellagra	....	....	....	....	....	....	....	....	1	1	....	....	2	0	2	0	0	0	2
28. Tuberculosis of the lungs	1	1	....	2	....	....	2	....	1	....	....	1	1	0	1	3	4	7	8
29. Acute miliary tuberculosis	1	....	....	....	....	....	....	....	....	....	1	....	1	0	1	0	1	1	2
30. Tuberculous meningitis	....	....	1	....	1	....	....	1	....	....	....	....	1	1	2	0	1	1	3
31. Abdominal tuberculosis	....	....	1	....	....	....	....	....	....	....	....	....	0	1	1	0	0	0	1
32. Pott's disease	....	....	....	....	....	....	....	....	....	1	....	....	0	0	0	0	1	1	1
40. Cancer of the stomach and liver	1	1	....	1	....	....	1	2	....	....	....	....	3	2	5	0	1	1	6
41. Cancer of the peritoneum, intestines, rectum	....	1	....	....	....	1	1	1	1	2	....	1	3	3	6	1	1	2	8
42. Cancer of the female genital organs	....	....	....	....	....	1	1	....	....	....	....	....	0	2	2	0	0	0	2
43. Cancer of the breast	....	....	....	....	....	1	....	....	1	....	....	1	0	1	1	0	2	2	3
44. Cancer of the skin	....	....	....	....	....	....	....	1	....	....	....	....	1	0	1	0	0	0	1
45. Cancer of other or unspecified organs	....	....	2	....	1	1	....	....	1	....	....	1	5	0	5	1	0	1	6
47. Acute articular rheumatism	....	....	1	....	....	....	....	....	....	....	....	....	0	1	1	0	0	0	1
49. Scurvy	....	....	....	....	....	....	1	....	....	....	....	....	1	0	1	0	0	0	1
50. Diabetes	....	....	....	....	....	....	....	....	....	....	....	1	0	1	1	0	0	0	1
53. Leuchaemia	....	....	....	....	1	....	....	....	....	....	....	....	1	0	1	0	0	0	1
54. Anaemia, chlorosis	....	1	....	....	....	....	....	....	....	1	....	....	1	1	2	0	0	0	2
55. Other general diseases	....	....	....	....	....	....	1	....	....	....	....	....	1	0	1	0	0	0	1

56. Alcoholism (acute or chronic)	....	....	....	1	....	....	....	....	....	....	....	....	1	0	1	0	0	0	1
59. Other chronic poisonings	....	....	....	1	....	....	....	....	....	....	....	....	1	0	1	0	0	0	1
II.—DISEASES OF THE NERVOUS SYSTEM																			
60. Encephalitis	....	....	....	....	....	....	....	....	....	1	....	....	1	0	1	0	0	0	1
61. Simple meningitis	....	....	....	....	....	1	....	1	....	....	1	....	1	1	2	0	1	1	3
63. Other diseases of the spinal cord	....	....	....	....	....	1	....	....	....	....	....	....	0	1	1	0	0	0	1
64. Cerebral hemorrhage, apoplexy	....	2	....	1	1	2	....	....	2	1	....	....	1	4	5	3	1	4	9
68. Other forms of mental alienation	....	....	1	....	....	....	....	....	....	....	....	....	1	0	1	0	0	0	1
71. Convulsions of infants	1	....	....	....	....	....	....	....	....	....	....	....	0	0	0	1	0	1	1
74. Other diseases of the nervous system	2	....	....	....	....	....	....	....	....	....	1	....	2	0	2	1	0	1	3
76. Diseases of the ears	....	....	....	1	....	....	....	....	....	....	....	....	1	0	1	0	0	0	1
III.—DISEASES OF THE CIRLATORY SYSTEM																			
78. Acute endocarditis	....	....	1	....	....	1	....	....	....	....	....	....	0	1	1	1	0	1	2
79. Organic diseases of the heart	1	....	1	....	....	....	2	1	1	3	....	2	3	7	10	1	0	1	11
80. Angina pectoris	....	....	....	....	....	1	....	....	....	....	....	....	0	1	1	0	0	0	1
81. Diseases of the arteries, atheroma, aneurysm, etc	....	1	....	....	....	....	....	....	1	....	....	....	1	0	1	1	0	1	2
82. Embolism and thrombosis	....	....	....	....	....	....	1	....	....	1	1	....	1	1	2	1	0	1	3
IV.—DISEASES OF THE RESPIRATORY SYSTEM																			
86. Diseases of the nasal fossae	....	....	....	1	....	....	....	....	....	....	....	....	1	0	1	0	0	0	1
90. Chronic bronchitis	....	....	....	....	....	....	....	....	1	....	....	....	1	0	1	0	0	0	1
91. Broncho-pneumonia	....	....	....	....	....	....	....	1	....	....	....	....	0	0	0	0	1	1	1
92. Pneumonia	1	1	....	1	....	....	....	....	....	....	....	....	1	0	1	2	0	2	3
93. Pleurisy	....	....	....	....	....	....	1	....	....	....	....	....	1	0	1	0	0	0	1
94. Pulmonary congestion, pulmonary apoplexy	....	....	....	....	1	....	....	....	1	....	....	....	1	0	1	0	1	1	2
V.—DISEASES OF THE DIGESTIVE SYSTEM																			

TABLE No. 17—*Continued*

CAUSES OF DEATH	MONTHS												WHITE			COLORED			Grand Total
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Male	Female	Total	Male	Female	Total	
99. Diseases of the mouth and adnexa	....	....	....	....	....	....	1	....	....	....	....	....	0	0	0	1	0	1	1
101. Diseases of the oesophagus	....	....	....	....	....	....	....	....	....	....	1	....	1	0	1	0	0	0	1
102. Ulcer of the stomach	....	1	....	....	....	2	....	....	....	....	....	....	2	0	2	0	1	1	3
103. Other diseases of the stomach, (cancer excepted)	....	....	....	....	....	....	1	....	....	....	....	....	1	0	1	0	0	0	1
104. Diarrhea and enteritis (under 2 years)	....	....	....	1	2	3	....	....	....	....	....	....	2	2	4	2	0	2	6
105. Diarrhea and enteritis (2 years and over	....	1	2	....	....	....	2	....	2	....	....	....	4	3	7	0	0	0	7
108. Appendicitis and typhlitis	....	2	2	2	....	1	2	3	....	2	....	1	8	4	12	2	1	3	15
109. Hernias, intestinal obstruction	1	2	....	2	....	....	2	....	....	2	2	1	5	5	10	1	1	2	12
113. Cirrhosis of the liver	2	1	....	....	1	....	....	1	....	....	....	1	5	0	5	1	0	1	6
114. Biliary calculi	1	....	1	2	....	....	1	....	1	....	1	....	2	5	7	0	0	0	7
115. Other diseases of the liver	....	1	....	2	....	1	1	....	....	....	....	....	2	3	5	0	0	0	5
117. Simple peritonitis (non-puerperal)	....	....	....	....	....	1	....	....	....	....	....	....	0	0	0	0	1	1	1
118. Other digestive diseases (except cancer, tuberculosis)	....	....	....	1	....	....	....	....	....	....	....	....	0	0	0	1	0	1	1
VI.—DISEASES OF THE GENITO-URINARY SYSTEM																			
119. Acute nephritis	1	....	....	1	3	....	....	....	....	....	....	....	1	2	3	1	1	2	5
120. Bright's disease	....	5	1	....	1	4	....	2	....	....	3	....	11	2	13	2	1	3	16
122. Other diseases of the kidneys and adnexa	....	1	1	....	1	2	....	....	....	....	....	....	3	2	5	0	0	0	5
123. Calculi of the urinary passages	....	1	....	....	....	....	....	....	....	....	1	....	2	0	2	0	0	0	2
125. Other diseases of the urethra, urinary abscess, etc	....	....	....	....	1	....	....	....	....	....	....	....	1	0	1	0	0	0	1
126. Diseases of the prostate	....	1	3	....	1	1	....	1	....	....	....	2	5	0	5	4	0	4	9
129. Uterine tumor (noncancerous)	....	....	....	1	....	1	....	....	....	....	1	....	0	0	0	0	3	3	3
130. Diseases of the uterus	....	....	....	1	....	....	1	....	....	....	....	....	0	2	2	0	0	0	2

132. Other (nonvenereal)) disease of the female genital organs						2	1	1					0	4	4	0	0	0	4
VII.—THE PUERPEREAL STATE																			
134. Accidents of pregnancy				1			1			1			0	3	3	0	0	0	3
135. Puerperal hemorrhage												1	0	1	1	0	0	0	1
137. Puerperal septicemia		1					1						0	0	0	0	2	2	2
138. Puerperal albuminuria and convulsions				1			1	1					0	3	3	0	0	0	3
VIII.—DISEASES OF THE SKIN																			
142. Gangrene			1										0	0	0	1	0	1	1
IX.—DISEASES OF THE ORGANS OF LOCOMOTION																			
146. Diseases of the bones (tuberculosis excepted)											1		1	0	1	0	0	0	1
X.—MALFORMATIONS																			
150. Congenital malformations (stillbirths not included)			1										1	0	1	0	0	0	1
XI.—DISEASES OF EARLY INFANCY																			
151. Congenital debility, icterus and and sclerema	1						1	2					2	2	4	0	0	0	4
XII.—OLD AGE																			
154. Senility					1								1	0	1	0	0	0	1
XIII.—EXTERNAL CAUSES																			
155. Suicide by poison		1											0	1	1	0	0	0	1
156. Suicide by asphyxia		1											1	0	1	0	0	0	1
159. Suicide by firearms	1												1	0	1	0	0	0	1
161. Suicide by jumping from a high place			1				1						2	0	2	0	0	0	2

TABLE No. 17—*Continued.*

CAUSES OF DEATH	MONTHS												WHITE			COLORED			Grand Total
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Male	Female	Total	Male	Female	Total	
165. Other acute poisoning	....	....	....	....	....	....	....	....	....	....	1	....	1	0	1	0	0	0	1
167. Burns	....	....	....	1	1	....	....	1	....	....	3	....	1	2	3	3	0	3	6
168. Absorption of deleterious gases	....	1	....	....	....	1	....	....	1	....	....	1	3	0	3	1	0	1	4
169. Accidental drowning	....	....	....	....	....	....	....	....	....	1	....	....	1	0	1	0	0	0	1
170. Traumatism by firearms	1	....	1	....	....	....	....	....	1	....	....	....	1	0	1	1	1	2	3
172. Traumatism by fall	....	1	....	....	....	....	....	2	....	1	....	....	2	1	3	1	0	1	4
175. Traumatism by other crushing	1	....	....	2	1	....	1	....	....	1	1	....	2	0	2	5	0	5	7
182. Homicide by firearms	1	1	1	....	....	....	....	....	1	....	....	....	1	0	1	3	0	3	4
183. Homicide by cutting or piercing instruments	....	....	....	....	....	....	1	....	....	....	....	....	0	0	0	1	0	1	1
184. Homicide by other means	....	....	....	....	1	....	....	....	....	....	....	1	1	0	1	1	0	1	2
186-A. Legal electrocution	1	1	2	....	2	3	....	2	....	1	....	2	5	0	5	9	0	9	14
186-B. Other external violence	....	....	1	....	....	....	....	1	....	....	....	....	2	0	2	0	0	0	2
Total deaths from all causes among nonresidents	21	31	26	27	25	34	30	28	13	20	19	17	131	80	211	57	29	86	297

TABLE NO. 18.

Giving Death Rate and Per Cent of Deaths from Different Causes.

CAUSE OF DEATH	ACTUAL NUMBER OF DEATHS			DEATH-RATE PER 1,000 LIVING			PER CENT. OF TOTAL MORTALITY		
	White	Colored	Total	White	Colored	Total	White	Colored	Total
I. General Diseases....	343	317	660	4.12	6.53	5.00	24.30	24.26	24.28
II. Diseases of the nervous system and organs of special sense	158	140	298	1.90	2.89	2.26	11.20	10.72	10.97
III. Diseases of the circulatory system...	189	142	331	2.27	2.93	2.51	13.40	10.87	12.18
IV. Diseases of the respiratory system.....	105	203	308	1.21	4.18	2.33	7.45	15.54	11.33
V. Diseases of the digestive system...	183	134	317	2.20	2.76	2.40	12.97	10.25	11.67
VI. Diseases of the genito-urinary system and its adnexa....	191	125	316	2.29	2.58	2.39	13.51	9.53	11.63
VII. The puerperal state.	21	16	37	.25	.33	.28	1.49	1.22	1.36
VIII. Diseases of the skin and cellular tissue	3	6	9	.04	.12	.07	.21	.46	.33
IX. Diseases of the organs of locomotion	2	1	3	.02	.02	.02	.14	.08	.11
X. Malformations	17	6	23	.20	.12	.17	1.21	.46	.85
XI. Early infancy.......	83	95	178	1.00	1.96	1.35	5.88	7.27	6.52
XII. Old age.............	13	3	16	.16	.06	.12	.93	.23	.59
XIII. External causes.....	96	95	191	1.15	1.96	1.45	6.81	7.27	7.04
XIV. Ill-defined diseases..	7	24	31	.09	.49	.23	.50	1.84	1.14
Total deaths from all causes	1,411	1,307	2,718	16.90	26.93	20.58	100.00	100.00	100.00

TABLE NO. 19.

Giving Death-Rate and Per Cent. of Deaths at Different Age Periods.

AGE PERIODS	ACTUAL NUMBER OF DEATHS			DEATH-RATE PER 1,000 LIVING AT ALL AGES			PER CENT. OF TOTAL MORTALITY		
	White	Colored	Total	White	Colored	Total	White	Colored	Total
Less than one day	33	30	63	.39	.62	.48	2.34	2.30	2.32
Between 1 day and 1 week.	24	25	49	.29	.51	.37	1.70	1.91	1.80
First week	57	55	112	.68	1.13	.85	4.04	4.21	4.12
2nd, 3rd and 4th weeks	30	32	62	.36	.66	.47	2.12	2.45	2.28
First month	87	87	174	1.04	1.79	1.32	6.16	6.66	6.40
1 to 3 months	40	47	87	.48	.97	.66	2.83	3.60	3.20
3 to 6 months	48	66	114	.57	1.36	.86	3.40	5.05	4.20
6 to 12 months	59	74	133	.71	1.52	1.01	4.18	5.66	4.89
First year	234	274	508	2.80	5.64	3.85	16.57	20.97	18.69
Second year	39	46	85	.47	.95	.64	2.76	3.52	3.13
Third year	17	17	34	.20	.35	.26	1.21	1.30	1.25
Fourth year	10	16	26	.12	.33	.20	.71	1.22	.96
Fifth year	10	5	15	.12	.10	.11	.71	.38	.55
Total under 5 years	310	358	668	3.71	7.37	5.06	21.96	27.39	24.58
5 to 10 years	28	16	44	.34	.33	.33	1.99	1.22	1.62
10 to 15 years	19	18	37	.23	.37	.28	1.35	1.38	1.36
15 to 20 years	30	48	78	.36	.99	.59	2.13	3.67	2.87
20 to 25 years	53	84	137	.64	1.73	1.04	3.76	6.43	5.04
25 to 30 years	48	84	132	.57	1.73	1.00	3.40	6.43	4.85
30 to 35 years	49	94	143	.59	1.94	1.08	3.47	7.19	5.26
35 to 40 years	61	99	160	.73	2.04	1.21	4.32	7.58	5.89
40 to 45 years	64	98	162	.77	2.02	1.23	4.54	7.50	5.96
45 to 50 years	62	88	150	.74	1.81	1.14	4.40	6.73	5.52
50 to 55 years	75	91	166	.90	1.87	1.26	5.31	6.96	6.11
55 to 60 years	102	87	189	1.22	1.79	1.43	7.24	6.66	6.96
60 to 65 years	92	67	159	1.10	1.38	1.20	6.50	5.12	5.86
65 to 70 years	99	33	132	1.18	.68	1.00	7.02	2.52	4.85
70 to 75 years	117	21	138	1.40	.43	1.04	8.30	1.61	5.08
75 to 80 years	106	11	117	1.27	.23	.89	7.51	.84	4.30
80 to 85 years	61	4	65	.73	.08	.49	4.32	.31	2.39
85 to 90 years	25	2	27	.30	.04	.20	1.77	.15	.99
90 to 95 years	8	1	9	.10	.02	.07	.57	.08	.33
95 to 100 years	2	1	3	.02	.02	.02	.14	.08	.11
Over 100 years	0	2	2	.00	.04	.02	.00	.15	.07
Total	1,411	1,307	2,718	16.90	26.93	20.58	100.00	100.00	100.00

TABLE NO. 20.

Showing Number of Non-Residents Buried Here and Their Color.

	White	Colored	Total
NON-RESIDENTS	423	101	524

Showing the Number of Persons Who Died Here and were Buried Elsewhere and Their Color

	White	Colored	Total
TRANSIT PERMITS GRANTED	336	225	561

TABLE NO. 21.

Showing the Number of Typhoid Fever Cases Reported to the Health Department, and the Number of Deaths for Each Month in 1913.

MONTH	Cases on hand at beginning of month	Cases Reported in Month.			Total under Treatment	Deaths in Month.			Recoveries in Month	Total Discharges	Cases on hand at end of Month
		White	Col'd	Total		White	Col'd	Total			
January	*3	1	0	1	4	1	0	1	2	3	1
February	1	1	2	3	4	1	0	1	2	3	1
March	1	4	1	5	6	0	0	0	0	0	6
April	6	9	0	9	15	0	0	0	2	2	13
May	13	21	5	26	39	2	1	3	8	11	28
June	28	34	7	41	69	3	3	6	23	29	40
July	40	25	6	31	71	1	2	3	26	29	42
August	42	33	18	51	93	3	0	3	26	29	64
September	64	25	4	29	93	5	1	6	50	56	37
October	37	12	6	18	55	0	1	1	28	29	26
November	26	4	5	9	35	0	1	1	11	12	23
December	23	9	1	10	33	2	0	2	26	28	†5
Summary for the year....	......	178	55	233	478	18	9	27	196	220	......

*Cases on hand at beginning of 1913.
†Cases on hand at close of 1913.

TABLE NO. 22.

Showing Number of Cases of Diphtheria, Scarlet Fever and Measles Reported to the Health Department, and the Deaths from these Diseases During Each Month of 1913.

MONTHS	DIPHTHERIA						SCARLET FEVER						MEASLES					
	Cases			Deaths			Cases			Deaths			Cases			Deaths		
	White	Colored	Total	White	Colored	Total	White	Colored	Total	White	Colored	Total	White	Colored	Total	White	Colored	Total
January	15	1	16	0	0	0	30	0	30	0	0	0	1,390	228	1,618	3	4	7
February	15	0	15	2	0	2	15	0	15	1	0	1	1,497	510	2,007	4	2	6
March	3	0	3	0	0	0	8	0	8	0	0	0	714	469	1,183	5	3	8
April	3	1	4	0	0	0	6	1	7	0	0	0	201	73	274	2	1	3
May	1	0	1	0	0	0	6	5	11	0	0	0	71	8	79	1	0	1
June	5	0	5	0	0	0	9	1	10	0	0	0	14	2	16	0	0	0
July	2	1	3	0	0	0	6	2	8	0	0	0	4	1	5	0	0	0
August	7	0	7	1	0	1	21	0	21	0	0	0	2	0	2	0	0	0
September ...	24	2	26	0	0	0	21	2	23	0	0	0	2	1	3	0	0	0
October	42	1	43	3	0	3	34	9	43	1	0	1	0	1	1	0	0	0
November ...	21	1	22	1	0	1	32	4	36	1	0	1	3	0	3	0	0	0
December ...	19	5	24	1	0	1	49	5	54	1	1	2	4	1	5	0	0	0
Total	157	12	169	8	0	8	237	29	266	4	1	5	3,902	1,294	5,196	15	10	25

TABLE NO. 23.

Showing Number of Cases of Whooping Cough, Chicken-Pox and Smallpox Reported to the Health Department, and the Number of Deaths for Each Month of 1913.

MONTHS	WHOOPING COUGH						CHICKEN-POX						SMALLPOX					
	Cases			Deaths			Cases			Deaths			Cases			Deaths		
	White	Colored	Total	White	Colored	Total	White	Colored	Total	White	Colored	Total	White	Colored	Total	White	Colored	Total
January	0	0	0	0	0	0	46	15	61	0	0	0	0	0	0	0	0	0
February ...	1	0	1	0	0	0	37	11	48	0	0	0	0	0	0	0	0	0
March	2	2	4	0	0	0	24	6	30	0	0	0	0	3	3	0	0	0
April	4	3	7	0	0	0	11	11	22	0	0	0	2	1	3	0	0	0
May	9	5	14	1	1	2	16	11	27	0	0	0	0	1	1	0	0	0
June	10	0	10	0	0	0	17	7	24	0	0	0	0	0	0	0	0	0
July	56	5	61	1	1	2	7	0	7	0	0	0	0	1	1	0	0	0
August	27	5	32	3	5	8	2	1	3	0	0	0	0	0	0	0	0	0
September ..	10	0	10	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
October	17	4	21	1	0	1	5	1	6	0	0	0	0	1	1	0	0	0
November ...	2	7	9	1	0	1	25	4	29	0	0	0	0	0	0	0	0	0
December ...	15	13	28	2	1	3	32	9	41	0	0	0	1	0	1	0	0	0
Total	153	44	197	9	8	17	223	76	299	0	0	0	3	7	10	0	0	0

TABLE NO. 24.

Meteorological Observations, 1913.*

MONTH	THERMOMETER			Rainfall in Inches
	Highest Degree	Lowest Degree	Mean Degree	
January	75	25	47	2.53
February	71	14	40	1.51
March	80	21	52	3.53
April	87	34	58	2.54
May	92	38	67	4.80
June	97	46	74	3.78
July	97	60	79	3.65
August	94	58	75	4.59
September	89	43	69	3.20
October	81	29	60	3.95
November	80	25	50	1.49
December	68	23	42	2.17
Total	....	....	....	37.74

*From reports of United States Weather Bureau.

REPORT OF THE MEDICAL INSPECTOR.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Virginia.

Sir:

I have the honor to submit herewith my report as Medical Inspector for the year 1913. This report covers also the work done by my two predecessors, Dr. C. C. Hudson and Dr. T. V. Goode during the first five months of the year.

The work in main has been the same ever since the office of Medical Inspector was first established. One of the many duties of this office is to quarantine all persons with contagious diseases and see that proper quarantine is observed. The results have been very gratifying in every instance in which instructions were followed. By following up this work it was found that secondary cases were extremely infrequent where proper precautions were taken and strict quarantine observed, while, on the contrary, where children were allowed to go in the room where the infectious case was, one or more secondary cases almost invariably developed. In several instances every child in the house had the disease. This clearly shows us the value of proper precautions and strict isolation of contagious cases.

The following table shows the number of recorded visits made by the Medical Inspector and the diseases for which they were made.

Table Showing Visits Made by Medical Inspector in 1913.

MONTH	Typhoid Fever	Diphtheria	Scarlet Fever	Measles	Chickenpox	Smallpox	Vaccinations	Diarrhea and Enteritis	Other Causes	Total
January	2	19	129	1,618	14	0	19	0	4	1,805
February	5	16	74	2,007	12	0	28	0	7	2,149
March	7	3	40	1,183	15	6	90	0	5	1,349
April	12	6	34	274	22	15	32	0	12	407
May	30	1	30	80	10	10	23	0	30	214
June	64	22	72	25	24	1	2	0	30	240
July	42	9	108	9	8	5	62	86	35	364
August	64	28	133	3	3	6	10	36	22	305
September	42	103	138	3	1	0	40	20	23	370
October	24	141	240	1	6	0	30	10	53	505
November	12	89	193	3	29	0	5	5	35	371
December	12	117	228	5	51	0	26	4	52	495
Total	316	554	1,419	5,211	195	43	367	161	308	8.574

This table shows the number of visits made by the Medical Inspector for various causes. These numbers are not the same as the number of cases of the various diseases, which latter is shown in Tables Nos. 21, 22 and 23, as more than one visit was frequently paid to the same case.

To this should be added 352 visits for taking diagnostic cultures and 394 visits for taking release cultures for diphtheria, making a total of 9.320 visits made during the year; this includes those visits made by Mrs. Silverwood, who began work on measles during the last week in December, 1912, and continued until April 1, 1913.

The above table shows the great increase in the work of the Medical Inspector for 1913, caused by the epidemic of measles, which lasted from December, 1912, to May, 1913. There were 3,890 more visits paid during the year 1913 than any other year since the office of Medical Inspector was established.

TABLE NO. 2

Table Showing Cultures Taken in 1913.

MONTH	DIPHTHERIA CULTURES TAKEN		
	Diagnosis	Release	Total
January	22	65	87
February	13	27	40
March	1	7	8
April	2	8	10
May	1	1	2
June	2	16	18
July	2	8	10
August	4	10	14
September	33	38	71
October	100	84	184
November	85	70	155
December	87	60	147
Total	352	394	746

Typhoid Fever.

The typhoid record for 1913 shows that twenty-five more cases of typhoid were reported during the year than were reported in 1912, with five more deaths. The year opened with three cases on hand, and one case was reported during the month, with a death of an imported case carried over from 1912.

Table Showing the Number of Cases, Deaths and Death Rate from Typhoid Fever for Each Year from 1907 *to* 1913, *Inclusive.*

YEAR	CASES REPORTED			DEATHS			DEATH RATE PER 100,000		
	White	Colored	Total	White	Colored	Total	White	Colored	Total
1907	395	100	495	37	10	47	52.5	23.3	41.4
1908	388	106	494	39	18	57	54.6	41.5	49.7
1909	293	83	376	18	10	28	24.9	22.8	24.1
1910	197	66	263	15	13	28	18.6	27.5	21.9
1911	188	63	251	16	7	23	19.6	14.7	17.8
1912	147	61	208	16	6	22	19.4	12.5	16.8
1913	178	55	233	18	9	27	21.6	18.5	20.4

Prompt inspection was made of every case of typhoid during the year, finding out, when possible, where the disease was contracted, and getting other data that threw light on each individual case and collectively on the typhoid situation in the city.

In visiting these cases, every source of danger to others was carefully gone into, and in every instance careful instructions were given, going into the minutest details in handling the case. A second visit, and often a third or fourth, was paid to those who were lax or did not see the importance of being careful with everything that came in contact with typhoid patients. In three instances the mothers allowed small children to play in the room with a typhoid patient, after having been warned several times against it. In each instance one or more contracted typhoid. One mother had this repeated three times.

There were no cases traceable to food supplies during the year, though this avenue of infection was carefully gone into in every case, especial attention being paid to the milk supply and how used by the patient.

Fulton was practically free from typhoid fever during the entire year. South of Main Street, between First Street on the east and Robinson Street on the west, suffered more severely from typhoid than any other part of the city, forty-four cases being reported from that district. Ninety per cent (90 per cent) of these cases were between Harrison Street on the east and Strawberry on the west. Typhoid in this neighborhood ran a protracted course of a very severe type. That part of the city bounded by First Street on the east, Main Street on the south, Robinson on the west and Broad Street on the north, had, prior to 1913, been practically free from typhoid, except imported cases. During 1913 there were forty-six cases reported from this territory. Of this number twenty were imported, leaving twenty-six cases contracted in the city.

Church Hill had less typhoid during 1913 than in any previous year, due to extension of sewers and city water, which has reduced the number of cases greatly.

Manchester had a little typhoid outbreak in May, seven cases, with one death, directly traceable to the fact that the filtration plant was out of commission for one day in April.

Seventy-one (71) cases of typhoid fever were contracted outside of Richmond. Six (6) cases were carried as 50 per cent probability of being contracted in the city, three as 25 per cent probability, and one as 75 per cent probability, leaving 152 cases of typhoid contracted in Richmond.

During 1913 there were twenty-seven deaths from typhoid, eighteen white and nine colored.

Dr. Levy's report shows that the diagnosis of typhoid was positive in seventeen cases and extremely doubtful in ten. By referring back a brief history will be found of each fatal case of typhoid fever.

Physicians have repeatedly asked the Medical Inspector to assist in reaching a diagnosis in doubtful cases of typhoid. As a result, twenty-seven blood cultures, fourty weidals, and fourteen malaria specimens have been taken by the Medical Inspector since June, resulting in most instances in clearing up the diagnosis. One case that was thought to be typhoid fever turned out to be influenza. The organism was found in the blood, and the subsequent history bore out the diagnosis. Another case that was diagnosed as typhoid showed septicemia from blood cultures. This patient died three days after the culture was taken. In many more instances the diagnosis has been promptly cleared. Every physician is urged to use this and other means afforded by this office to assist in any way possible in making diagnoses.

The Medical Inspector made it a rule to visit all the hospitals at intervals and inquire whether all reportable diseases had been reported to the Health Department. On one visit he found fifteen cases of typhoid in various stages that had not been reported. Visits were repeated, and with less results each time, until all cases were promptly reported as they came in. The reporting of contagious diseases in hospitals always presents difficulties, owing to the divided responsibility. The plan just mentioned, while involving considerable work and departing from the regular method of securing reports, appears to offer the most satisfactory solution of the problem.

Table Showing the Case Fatality of Typhoid Fever in 1913.

CASES	No. of Cases	No. Cases Terminated	Deaths	Case Fatality Per Cent.
On hand January 1, 1913	3	3	1	33.3
Reported in 1913	233	228	26	11.4
Total under treatment in 1913	236	231	27	11.7
Cases contracted in 1913:				
White	178	174	18	10.3*
Colored	55	54	9	16.7
Contracted in Richmond (estimated)	152	148	14	9.5
Contracted out of Richmond (estimated)	81	80	13	16.3
Corrected figures for 1912, from final outcome of all cases reported during the year*	217	217	23	10.6

*When the 1912 annual report was submitted, 3 of the cases reported during that year were still on hand. One (1) subsequently died.

Table Showing Deaths and Death Rates from Typhoid Fever in 1913.

	No. of Deaths	Death Rate per 100,000
Total deaths	27	20.4
White	18	21.6
Colored	9	18.5
Contracted in Richmond	14	10.6
White	8	9.6
Colored	6	12.4
Contracted out of Richmond	13	9.8
White	10	12.0
Colored	3	6.2

Table Showing Cases of Typhoid Fever Contracted In and Out of the City During 1913.

Cases certainly contracted in city	152	
Cases in which information was not conclusive:		
1 probably contracted in city (probability 75%)	1	
6 with equal probability (probability 50%)	3	
3 possibly contracted in city (probability 25%)	1	
Total cases contracted in city (known and estimated)	157	67.3 per cent.
Cases certainly contracted out of city (known and estimated)	76	
Cases in which information was not conclusive:		
10 cases (see above) less 5 estimated as contracted in the city	5	
Total cases contracted out of city (known and estimated)	81	32.7 per cent

Diphtheria.

There were 169 cases of diphtheria reported during 1913, which was 37 cases less than were reported in 1912. During the year there have been some unusual cases of diphtheria. One of these was that of a five-year-old child. In this case diphtheria of the penis followed circumcism. Diphtheria bacilli were present on the throat and on a small wound on the leg where he had scratched.

One very interesting case was in a colored child who complained of pain in the right ear. Examination showed a slight discharge. The physician took a swab, which showed the presence of diphtheria bacilli. The case cleared up promptly after antitoxin was administered.

Another patient, recovering from scarlet fever, continued to have a sore throat and discharge from the left ear. A culture from the throat was negative, but one from the ear showed typical diphtheria bacilli. This case cleared up promptly after the administration of antitoxin.

Cultures have been repeatedly taken from schools where a number of cases have developed. In several instances carriers have been found, sent home, and properly quarantined. It has been the practice of the present incumbent to take cultures from the throats and noses of all school children in homes in which there is a case of diphtheria, before releasing the case. As a result of this practice, several children have been prevented from going to school while in a condition which would have rendered them a menace to other children.

The youngest case of diphtheria during the year was an infant twelve days old, delivered in a hospital. On the eleventh day a nasal discharge was noticed. A culture showed the presence of diphtheria bacilli. There being no other known case of diphtheria in this hospital, careful study was undertaken by the attending physician to determine the source of infection. Cultures from the throats of all the children in the hospital and all nurses that attended the children failed to locate the carrier. Believing that a carrier case was the only possible explanation, the Medical Inspector visited the ward, and, finding two with nasal discharges, cultures of these were requested. Examination of these proved positive, thus clearing up the source of infection. The child that originally had diphtheria had been under treatment in the hospital for over one year, but had been allowed to go out. In this way she contracted diphtheria, but this was not recognized until two other cases developed.

Eleven (11) persons over twenty-one years of age had diphtheria, the oldest being fifty years old. The fact that colored persons are not as susceptible to diphtheria as whites has been very prominent this year, for out of the 169 cases reported only 10 were colored.

There were five cases of nasal diphtheria reported during the year, all of which recovered.

Laryngeal diphtheria has been prevalent this year. Every case has been characterized by rapid onset and progressive stenosis, and several cases died before intubation could be done. During the year fifteen cases of laryngeal diphtheria were reported, with four deaths, giving a case fatality of 26.6 per cent from this form. In addition to the four deaths from laryngeal diphtheria, there were four deaths from other forms of the disease—a total of eight.

During the year the Medical Inspector has repeatedly been asked to see cases, give antitoxin if thought necessary, and take cultures from diagnoses.

Summary of Diphtheria Statistics.

Total cases reported	169
Total deaths	8
Case fatality per cent	4.7
Death rate per 100,000	6.1

Scarlet Fever.

There were 266 cases of scarlet fever reported during 1913, against 326 in 1912—a decrease of 60 cases. The disease was, however, of an unusually severe type for Richmond, there having been 5 deaths, giving a death rate of 3.8 per 100,000.

In one household there were 5 cases of scarlet fever, a mother and four children, with 3 deaths—the mother and two of the children. Two (2) of these fatal cases, as well as 1 of the cases which recovered, had diptheria as a complication. This was determined by bacteriological examination.

In addition to the 3 cases just cited, there were during the year 2 other cases in one home in which scarlet fever and diphtheria were present. A combination of scarlet fever and diphtheria is unusual, but having found in our city 5 cases with both diseases this suggests the great desirability of getting swabs from the throats of all scarlet fever patients who have a distinct membrane. If it is found that diphtheria is present, antitoxin can be promptly given to cure the diphtheria, in order that the body can fight scarlet fever and not the combination, greatly increasing the chances for recovery.

That the type of scarlet fever this year has been very severe, has been shown by the number of deaths, also by the number of adults who contracted it during the year, 16 cases having developed in persons over 21 years of age. A man 54 years old had a typical case of scarlet fever. Two cases of scarlet fever developed in women the third day after confinement. Their babies nursed throughout the course of the disease. One of them developed a mild case, while the other escaped entirely.

Scarlet fever took on a serious aspect several times during the year, when it broke out in institutions in which there were a number of children—the Belle Bryan Nursery, the Maternity Home, and the Methodist Home. In each instance the cases were promptly taken to the City Hospital and the remaining children closely watched. In no instance did over three cases develop.

The Medical Inspector was called on repeatedly to assist in diagnosing scarlet fever and tracing its origin. In a number of instances cases at large were recognized promptly and quarantined. Schools have been inspected for scarlet fever, and in several instances mild cases have been detected and quarantined in their homes.

Several cases of scarlet fever were reported as measles. In each instance the Medical Inspector got in communication with the attending physician and asked him to reconsider his diagnosis, and in every instance, except one, they gladly went further into the cases and changed their diagnoses.

One case reported as measles was visited and found to be a typical case of scarlet fever. The physician was asked to reconsider the diagnosis, but refused, even after desquamation left no room for doubt. In this instance the house was kept quarantined until desquamation was complete.

Fifteen (15) cases were reported in the colored race. One was 21 years of age.

Out of the 251 cases in whites, 15 were in persons over 21 years old; 6 in males, with no deaths; 9 in females, with 1 death.

Summary of Scarlet Fever Statistics for 1913.

Total cases reported	266
Total deaths	5
Case fatality per cent	1.8
Death rate per 100,000	3.8

Measles.

An epidemic of measles began in December, 1912. During that month 254 cases were reported. In Janaury, 1913, there were reported 1,618 cases. In February the climax was reached, when 2,007 cases were reported. There were reported 1,183 cases in March, 274 cases in April, 79 cases in May, and 16 in June, making a total of 5,177 cases reported the first six months of 1913.

The epidemic was so general over the entire city that Richmond was called a city of placarded houses. During the year 5,196 cases of measles were reported, which was 2,830 more cases than the epidemic of 1910. In 1910 were recorded 29 deaths due to measles, against 25 deaths from the same cause in 1913. No doubt the low fatality was due to prompt inspection of all cases, the inspector leaving printed and verbal instructions how to take care of the patients so as to avoid the dangerous sequelae.

During the epidemic the work was so heavy that one nurse gave her entire time to visiting measles patients, while the other nurses of the Health Department gave part of their time to this work. Without their help the greater number of cases could not have been visited promptly, and no doubt this was a great factor in producing such low case fatality.

This epidemic lasted from December, 1912, until June, 1913, during which time 5,420 cases were reported, 254 cases being reported in December, 1912. The city has been practically free from measles since May, from 1 to 5 cases being reported each month.

Of the 25 deaths which were due to measles, 15 were white and 10 were colored.

Summary of Measles Statistics for 1913.

Total cases reported	5,196
Total deaths	25
Case fatality per cent	0.4
Death rate per 100,000	18.9

Smallpox.

There were 10 cases of smallpox reported in 1913, with no deaths, against 37 cases in 1912, with 1 death. Every case of smallpox reported in Richmond during 1913 was either imported or was contracted from direct exposure to an imported case. In several instances the cases were imported from North Carolina. One of these cases caused 4 other cases, 2 being of a very severe type.

In every instance vaccinators were put to work in the neighborhood where the case was reported.

The first case was reported March 10, a colored male, aged 23, who came here sick from Newport News, where he had contracted it. He was seen at the depot, diagnosed, and promptly sent to the smallpox hospital. The second case, a colored female, aged 21, contracted it while visiting Clarksville, or Midlothian, Va. She was a servant in a home at 2520 East Franklin Street.

The third case was that of a colored man, 26 years of age, who worked at the Southern Stock yards. He evidently contracted it from some one who brought stock there from the country. The fourth case was directly traced to the third case, for both worked at the Southern Stock Yards, and he developed smallpox the fourteenth day. The fifth case, a colored male, 26 years old, worked at the Southern Stock Yards, and developed from case number three, as numbers four and five broke out at nearly the same time, and both were exposed to the previous case at the yards.

The sixth case, a white male, aged 31, a C. & O. brakeman at Fulton yards, evidently contracted it while around the yards.

The seventh case, a white male, aged 30, baggage master on the Southern Railway, contracted small pox at Spencer, N. C. He was staying at the Railroad Y. M. C. A., which complicated things considerably. All unvaccinated persons in the Railroad Y. M. C. A. were vaccinated and sent to the smallpox hospital. Those who had previously been successfully vaccinated were revaccinated and allowed to return to work. Fortunately, no other cases developed from that source.

Case number eight, a colored female, 24 years old, was imported from Ginter Park. When she broke out, she went to her mother's home on the Petersburg pike, where she was found and sent to the hospital. Vaccinators were sent to work, and over 250 persons were vaccinated.

Case number nine, a colored female, aged 18, contracted smallpox while visiting in King William County, Va. This girl worked in a home on Floyd avenue. The lady for whom she worked noticed this peculiar eruption, and telephoned the Board of Health.

The tenth case, a white male, aged 19, came to Richmond December 22, from Goldsborough, N. C., where he contracted smallpox. This case was reported December 29, on the fifth or sixth day of the eruption. Upon investigating this case it was found that a cousin who had never been vaccinated was sleeping with him, also that a mother and child living in adjoining rooms had been intimately exposed. They were vaccinated and sent to the hospital, where they afterwards developed smallpox. The mother and child escaped with very mild cases of smallpox, while the cousin, who had been exposed continuously, developed one of the severest cases of smallpox seen here for years.

The Medical Inspector desires to assist the physicians of the city in every way possible, and he wishes to extend his thanks for the co-operation he has received.

Respectfully submitted,

B. E. SUMMERS, M. D.,
Medical Inspector.

REPORT OF BACTERIOLOGIST.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Va..

Sir:

I have the honor to submit herewith my report as City Bacteriologist for the year ending December 31, 1913. There were 2,906 diagnostic specimens examined during the year, which was 64 specimens less than 1912, as follows:

		1912		1913	
Diphtheria	Diagnosis	1,007		871	
	Release	691		498	
	Total		1,698		1,369
Typhoid Fever	Widal tests	341		437	
	Diazo tests	37		38	
	Other tests	43		60	
	Total		421		535
Tuberculosis			733		808
Malarial Fever			108		129
Other diagnostic tests			12		8
Total			2,972		2,906

In addition to the diagnostic work of the laboratory, 11 samples of water were examined and 1,622 samples of milk, making a total of 4,539 examinations for the year.

The Bacteriologist was granted a nine-weeks' leave of absence during the summer, which time was employed in further study at the University of Michigan. During this period the work was carried on by Dr. J. O. Fitzgerald, Assistant State Bacteriologist.

Though the number of specimens examined during 1913 was 65 less than in 1912, the work of the laboratory has really increased. The scope of the work has enlarged, especially in such tests as the blood culture and the Wasserman reaction, both of which tests require a great deal of time. The examination of blood cultures is no longer restricted to cases of suspected typhoid, but is now made in all cases of suspected septicaemia of any kind whenever requested by the physician. During the last few weeks of the year this laboratory has undertaken the Wasserman reaction, though compelled to restrict this to charity cases treated by the City Physicians or to cases at the City Hospital.

The Bacteriologist recommends that the Wasserman reaction and the gonococcus examination be undertaken by the city. This, however, would require the full time of the Bacteriologist, and can not therefore be undertaken under the present arrangement.

Diphtheria.

The decrease in the number of diphtheria specimens examined during 1913 is readily explained by the fact that there were 67 fewer cases of diphtheria than in 1912.

The direct swab and five-hour culture examinations have been continued in all cases where requested, frequently giving a much earlier diagnosis than could have been obtained by the regular method.

Showing Results of Direct Swab Examinations.

RESULT OF DIRECT SWAB EXAMINATIONS	RESULT OF REGULAR EXAMINATION.		
	Positive	Negative	Doubtful
Positive	2	0	1
Negative	1	*15	0
Doubtful	1	1	0
Total	4	16	1

*Three of these examinations showed the organisms of Vincent's Angina.

Showing Results of Five-Hour Culture Examinations.

RESULT OF FIVE-HOUR EXAMINATIONS.	RESULT OF REGULAR EXAMINATIONS.		
	Positive	Negative	Doubtful
Positive	6	0	0
Negative	0	29	1
Doubtful	0	0	0
Total	6	29	1

TYPHOID FEVER.

The blood culture has again continued to give very satisfactory results, while the Widal action has been as unsatisfactory as in former years. The blood culture is also gradually gaining in popularity, 55 cultures having been examined in 1913, while there were only 40 examined during 1912.

Table Showing Comparative Results of the Widal Reaction and Blood Culture Examination, Where Both of These Examinations were Made.

RESULTS OBTAINED FROM BLOOD CULTURES.	RESULTS OF WIDAL REACTION.		
	Positive	Negative	A typical
Positive for Typhoid Fever		1	2
Negative for Typhoid Fever		19	3

Of the 55 cultures examined:

No growth was obtained in 43 cultures, or 78.2 per cent.
Growth was obtained in 12 cultures, or 21.8 per cent.

Of the 12 cases from which a growth was obtained:

The typhoid bacillus was found in 9 cases.
The influenza bacillus was found in 1 case.
The streptococcus was found in 2 cases.

The subsequent clinical history bore out the bacteriological findings in every one of these cases.

The 43 specimens giving no growth were obtained from 41 cases, two cultures being taken in each of two cases.

38 of these proved negative clinically.
2 cases were doubtful.
3 cases were diagnosed as typhoid fever.

If we consider the doubtful cases to have been typhoid fever, then 38 of the 43 cases, or 88 per cent. of the negative culture, were correctly diagnosed.

If we consider these to have been negative, 40 cases, or 93 per cent., were correctly diagnosed. Including the 12 positive cases, and again considering the two doubtful cases to have been negative, we have 52 cases or 94.6 percent correctly diagnosed. We therefore consider the superiority of this method over the other laboratory methods of diagnosing typhoid fever to be proved conclusively.

Bacteriological Laboratory—Summary of Diagnostic Work for 1913.

1913 MONTHS	Purpose of Examination	DIPTHERIA					TYPHOID FEVER					TUBERCULOSIS			MALARIA				Total Examinations of All Kinds
		Result of Examination					Test	Result of Examination				Result			Result				
		Positive	Negative	Atypical	Specimen Unsatisfactory	Total		Positive	Negative	Atypical	Total	Negative	Positive	Total	Positive	Negative	Specimen Unsatisfactory	Total	
January	Diagnosis	12	82	1	0	170	Widal	1	6	3	13	14	48	62	0	1	0	1	246
	Release	23	51	0	1		Diazo	0	3	0									
February	Diagnosis	8	46	2	1	86	Widal	1	9	3	14	24	64	88	0	4	0	4	192
	Release	4	25	0	0		Diazo	0	1	0									
March	Diagnosis	2	47	2	0	86	Widal	3	13	2	18	17	44	61	1	8	0	9	174
	Release	12	23	0	0		Diazo	0	0	0									
April	Diagnosis	2	26	0	0	37	Widal	2	11	8	23	23	59	82	1	5	0	6	148
	Release	0	9	0	0		Diazo	0	2	0									
May	Diagnosis	1	21	0	0	24	Widal	0	32	13	47	15	46	61	1	7	0	8	140
	Release	0	2	0	0		Diazo	0	2	0									
June	Diagnosis	5	9	2	1	41	Widal	6	30	15	56	13	45	58	0	12	0	12	167
	Release	8	16	0	0		Diazo	0	5	0									
July	Diagnosis	0	12	1	0	21	Widal	9	42	17	76	13	51	64	1	12	0	13	174
	Release	2	6	0	0		Diazo	2	6	0									
August	Diagnosis	4	23	1	0	37	Widal	9	61	14	88	19	48	67	1	19	0	20	212
	Release	1	8	0	0		Diazo	1	2	1									

Bacteriological Laboratory—Summary of Diagnostic Work for 1913.—Continued.

1913 MONTHS	Purpose of Examination	DIPTHERIA					TYPHOID FEVER					TUBERCULOSIS			MALARIA				Total Examinations of All Kinds.
		Result of Examination					Test	Result of Examination				Result			Result				
		Positive	Negative	Atypical	Specimen Unsatisfactory	Total		Positive	Negative	Atypical	Total	Negative	Positive	Total	Positive	Negative	Specimen Unsatisfactory	Total	
September.....	Diagnosis	20	54	4	0	122	Widal	0	42	6	54	16	55	71	0	18	0	18	265
	Release	5	38	0	1		Diazo	4	2	0									
October	Diagnosis	36	105	3	0	246	Widal	1	26	9	36	17	44	61	0	12	0	12	355
	Release	29	73	0	0		Diazo	0	0	0									
November......	Diagnosis	15	145	2	0	246	Widal	1	17	2	21	20	33	53	1	9	0	10	330
	Release	19	65	0	0		Diazo	0	1	0									
December......	Diagnosis	15	158	3	0	253	Widal	3	18	2	29	14	66	80	1	15	0	16	378
	Release	21	56	0	0		Diazo	0	6	0									
Totals for 1913.	Diagnosis	......	......	......	......	871	Widal	......	......	......	437	Positive...		205	Positive			7	
	Release	......	......	......	......	498	Diazo	......	......	......	38	Negative..		603	Negative			122	2,781
	Total	......	......	......	......	1,369	Total	......	......	......	475	Total......		808	Total			129	

In addition to the above routine examinations the following examinations were also made:

Diptheria—Direct Swab Examinations	21
Diptheria—Five-Hour Cultures	36
Blood Culture Examinations	55
Para-Typhoid Fever Agglutination Tests................................	5
Wasserman Reactions	8
Total..	2,906

Bacteriological Examination of Milk.

During the year 1913 bacteriological examination was made of 1,622 samples of milk and cream, as follows:

Jan.	Feb.	Mch.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.		Total
216	152	136	132	132	116	176	115	149	137	110	141	. . .	1,622

Of the 1,622 samples, 284 were samples of cream and of milk used for churning only, and 1,338 were samples of regular market milk. These samples are classified in different tables, as cream usually contains more bacteria than milk, and the milk used for churning is for the most part that which comes from the greatest distance, being frequently 24 hours or more old when it arrives. All milk, whether used for churning or not, comes from inspected places. But sometimes milk having too high a temperature is allowed to be churned instead of being returned, and milk which has been excluded because of high bacterial counts may be used for churning until conditions have been corrected and subsequent samples show it to be again suitable for regular use. For these reasons the churning milk and cream have (would be expected) a higher bacterial count and are therefore classified separately.

TABLE A.

Bacteriological Examination of Regular Market Milk, Showing the Number of Samples in Each Class.

CLASS	January	February	March	April	May	June	July	August	September	October	November	December	Total
*Below 10,000	20	64	59	48	29	25	43	27	56	40	39	47	497
10,000 to 50,000	47	33	40	43	51	31	51	44	30	48	43	47	508
50,000 to 100,000	14	6	12	13	13	19	16	12	20	14	11	16	166
100,000 to 250,000	9	4	2	4	9	15	16	10	14	10	2	6	101
250,000 to 500,000	1	1	1	4	9	5	10	2	1	4	2	2	42
500,000 to 1,000,000	1	2	1	1	1	1	1	0	1	0	0	1	10
1,000,000 to 5,000,000	1	1	1	2	3	2	0	1	1	0	1	1	14
5,000,000 and over	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of samples	93	111	116	115	115	98	137	96	123	116	98	120	1,338
Average Air Temperature at 8 A. M. in Degrees F., on days on which samples were taken	37	34	47	50	64	70	75	73	84	51	45	35	

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* The numbers refer to bacteria per cubic centimeter.

TABLE B.

Bacteriological Examination of Regular Market Milk, Showing the Percentage of Samples in Each Class.

CLASS	January	February	March	April	May	June	July	August	September	October	November	December	Percentage of Total in Each Class
*Below 10,000	21.5	57.7	50.8	41.7	25.2	25.5	31.4	28.2	45.5	34.5	39.8	39.2	37.2
10,000 to 50,000	50.5	29.7	34.5	37.4	44.4	31.7	37.2	45.8	24.4	41.4	44.0	39.2	38.0
50,000 to 100,000	15.0	5.4	10.3	11.3	11.3	19.4	11.7	12.5	16.3	12.1	11.2	13.3	12.4
100,000 to 250,000	9.7	3.6	1.7	3.5	7.8	15.3	11.7	10.4	11.4	8.6	2.0	5.0	7.6
250,000 to 500,000	1.1	0.9	0.9	3.5	7.8	5.1	7.3	2.1	0.8	3.4	2.0	1.7	3.1
500,000 to 1,000,000	1.1	1.8	0.9	0.9	0.9	1.0	0.7	0.0	0.8	0.0	0.0	.8	1.0
1,000,000 to 5,000,000	1.1	0.9	0.9	1.7	2.6	2.0	0.0	1.0	0.8	0.0	1.0	.8	0.7
5,000,000 and over	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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* The numbers refer to bacteria per cubic centimeter.

TABLE C.

Bacteriological Examination of Cream and of Milk Used for Churning Only, Showing the Percentage of Samples in Each Class.

CLASS	January	February	March	April	May	June	July	August	September	October	November	December	Percentage of Total in Each Class
*Below 10,000	27.3	61.0	35.0	29.4	17.7	16.7	12.9	10.5	19.2	23.8	41.7	38.1	28.5
10,000 to 50,000	18.2	26.9	55.0	5.9	11.7	38.9	20.5	21.0	11.6	33.3	50.0	28.6	25.3
50,000 to 100,000	12.1	2.4	10.0	11.8	11.7	11.1	12.9	15.9	3.8	4.8	0.0	19.1	9.5
100,000 to 250,000	0.0	2.4	0.0	11.8	17.7	16.7	20.5	5.3	15.4	9.5	0.0	9.5	9.2
250,000 to 500,000	21.2	0.0	0.0	23.4	17.7	5.5	12.9	10.5	11.6	19.0	0.0	0.0	10.2
500,000 to 1,000,000	6.1	0.0	0.0	11.8	5.8	0.0	5.1	5.3	3.8	4.8	0.0	0.0	3.8
1,000,000 to 5,000,000	12.1	7.3	0.0	5.9	17.7	11.1	15.4	21.0	34.6	0.0	8.3	4.7	12.0
5,000,000 and over	3.0	0.0	0.0	0.0	0.0	0.0	0.0	10.5	0.0	4.8	0.0	0.0	1.5
Number of samples	33	41	20	17	17	18	39	19	26	21	12	21	284

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* The numbers refer to bacteria per cubic centimeter.

Table Showing the Bacterial Index of the Market Milk Supply of Richmond For the Years 1910, 1911, 1012 and 1913.

YEAR	BACTERIAL INDEX												
	January	February	March	April	May	June	July	August	September	October	November	December	Year
1910	85.4	86.7	82.0	83.1	82.0	73.7	74.7	81.3	84.2	86.8	85.2	88.0	82.8
1911	89.5	88.3	91.3	90.3	76.2	81.8	77.6	79.4	83.1	84.4	88.0	88.5	85.0
1912	93.8	92.7	90.1	90.4	86.0	81.8	77.4	72.4	80.1	89.1	86.2	73.2	85.9
1913	83.3	90.5	90.7	86.3	79.1	77.2	80.9	84.4	85.5	85.8	89.0	87.3	85.0

Respectfully submitted,

A. H. STRAUS, B. S.,

City Bacteriologist.

REPORT OF CONSULTANT IN DIPHTHERIA.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Va.

Sir:

I have the honor to submit herewith my report of cases of laryngeal diphtheria seen for the Health Department during the year ending December 31, 1913, also appended tabulated statement of laryngeal cases seen for the Health Department for seven years, 1907-1913, inclusive.

INTUBATED				NOT INTUBATED			TOTAL			Case Fatality Per Cent.
Recovered	Died	Total	Case Fatality Per Cent	Recovered	Died	Total	Recovered	Died	Total	
7	4	10	36.4	2	0	2	9	4	13	30.8

In 4 cases intubation was postponed upon first call. Two (2) of these did not subsequently need intubation, 1 was intubated after 17 hours, and 1 after 5 hours. Of the 4 deaths in cases intubated, 1 was due to edema of the lungs occurring 22 hours after intubation in a plethonic child. 2 years old, who landed in this country two days before intubation; 2 others, 16 months and 2 years old, respectively, had suffered from diphtheria for more than a week without medical attention, and were in extremis when seen. One of these died in less than two hours after intubation, without regaining consciousness; the other one apparently improved slightly on account of the prompt relief of the distressing dyspnea, but died 18 hours later of an overwhelming toxemia. The fourth fatal case was a child 2 years old, who had been sick for 4 or 5 days when first seen. She was suffering from urgent dyspnea when intubated, and was very ill for 5 days thereafter, running a high temperature, and showing marked prostration. On the fifth day after intubation she came very near dying of cardiac complications, on account of which the tube was left in 8 days. The tube was removed at 5 P. M. My custom is to remain at least a half hour after extubation with a case that is doing well, and as long as is necessary with one that is doing badly. This case breathed perfectly after extubation, and I left at 5:30. At 6:15 I was called hurriedly. A tube was reinserted at 6:40, with some difficulty, however, on account of complete collapse of the patient and the flaccid condition of the larynx. The child died 5 minutes later of cardiac failure, without making the slightest effort to breathe.

Two cases, aged 1 1-2 and 7 years, respectively, coughed up the tube, the former on the fifth and the latter on the fourth day. Neither case required reintubation. In one case, a child 16 months old, a 1-year tube was inserted with only moderate relief of the dyspnea. Two hours later the tube became somewhat filled with mucus. Uncomfortable breathing 5 hours after intubation caused me to remove the tube and insert a two-year tube, after which the child was perfectly comfortable, ran an uneventful course, and was extubated on the eighth day, with perfect recovery.

Four of the cases (31 percent of all), 11 months, 2 years, 3 years, and 4 1-2 years old, respectively, ran a perfectly normal course for intubation cases, were extubated on the sixth day, and made perfect recoveries. I regret that a larger number of cases can not be included in this list.

Without exception, the cases that came to intubation had been sick from 3 to 7 days without medical attention, and consequently had not had antitoxin. Liberal, early administration of antitoxin we believe to be of utmost importance in the treatment of diphtheria.

A majority of laryngeal cases, particularly those seen late, do not show membrane about the throat or tonsils or a positive culture from the swab taken for diagnosis, so the physician must depend for the diagnosis and the use of antitoxin rather upon his knowledge of the condition from the symptoms presented than upon the laboratory findings. It is safe to regard every case of croup in children existing continuously from 36 to 48 hours as due to Klebs-Loeffler infection.

May I not emphasize the fact that experience has demonstrated most emphatically the beneficial effects of early intubation, particularly in the young subject. The fatigue and prostration following one or two days of marked dyspnea, or a few hours of intense dyspnea, may be, in young children, the determining factor in the fatal termination of no small percent of laryngeal cases. I should urge, therefore, that physicians do not postpone intubation—an operation so easily had, and one that not only relieves suffering and agony, but has saved the lives of thousands of children.

I take this occasion to express my grateful appreciation of the cordial co-operation of the Medical Inspector, Dr. B. E. Summers, in procuring speedy intubation for cases needing the operation, and for valuable assistance at the time of operation, as well as his personal attention both to the cases thereafter and to the prompt investigation of cases suspected of having laryngeal complications.

Cases of Laryngeal Diphtheria Seen for the Richmond Health Department for Seven Years, 1907 *to* 1913.

YEAR	INTUBATED				NOT INTUBATED			TOTAL			
	Recovered	Died	Total	Case Fatality Per Cent.	Recovered	Died	Total	Recovered	Died	Total	Case Fatality Per Cent.
1907	5	1	6	16.7	1	0	1	6	1	7	14.3
1908	3	1	4	25.0	0	0	0	3	1	4	25.0
1909	5	1	6	16.7	2	0	2	7	1	8	12.5
1910	14	2	16	12.5	4	0	4	18	2	20	10.0
1911	22	1	23	4.4	8	1*	9	30	2	32	6.3
1912	7	2	9	22.2	7	0	7	14	2	16	12.5
1913	7	4	11	36.4	2	0	2	9	4	13	30.8
Total	63	12	75	16.0	24	1*	25	87	13	100	13.0

*Congenital stenosis of larynx, making intubation impossible. Died in spite of tracheotomy.

Respectfully submitted,
P. D. LIPSCOMB, M. D.

REPORT OF SMALLPOX HOSPITAL.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Va.

Sir:

I have prepared the following report of cases treated at the Smallpox Hospital for the year ending December 31, 1913.

	WHITE			COLORED			TOTAL		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Smallpox from Richmond...	4	0	4	3	3	6	7	3	10
Suspects from Richmond....	1	2	3	*1	0	1	2	2	4
Total	5	2	7	4	3	7	9	5	14

* This patient was taken care of for the Henrico County authorities, and his maintenance paid for by them.

Three (3) of the suspects, who were taken to the hospial December 29, 1913, subsequently developed smallpox. Two were very mild cases, while the third was a very severe case.

There were no deaths from smallpox during the year.

Respectfully submitted,

B. E. SUMMERS, M. D.
Medical Inspector.

REPORT OF NURSE IN CHARGE OF WORK FOR THE PREVENTION OF INFANT MORTALITY.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Va.

Sir:

I have the honor of submitting herewith my report of the work of the Nursing Staff in connection with

(1) The Prevention of Infant Mortality.
(2) Tuberculosis.

It is with gratification that I make this report, as our work has developed materially within the past year, and its influence is being widely felt throughout our territory, as I believe will be evinced by several incidents I wish to bring out later in this report. Our work has been along the lines mapped out by you in previous years, and within the same districts as in 1912. But in addition to the two branches of work mentioned above, we visited 729 cases of measles during the epidemic in the early part of the year.

All our nurses have done most excellent work, in spite of the excessive heat of the summer months and the prolonged illness of several of them.

The advantage of having the full corps of five nurses during the entire year can not be overestimated, as by this means we are enabled to locate and keep in touch with a far greater number of babies from birth than has been possible heretofore, and thereby carry out our object of keeping before the mothers the importance of breast-feeding. A number of these women are very ignorant, and do not know the danger of artificial feeding, unless under intelligent supervision. Frequently by timely advice and persuasion our nurses have kept mothers from feeding their babies artificially. For instance, a pair of twins under our supervision were not thriving on mother's milk—in fact, their weight at four weeks of age was the same as at birth, owing to the poor quality of the mother's milk. Naturally, she was very much inclined to discontinue breat-feeding entirely, but was persuaded to persevere with it, supplemented by cow's milk, and was instructed regarding her own health and diet. Since that time her health has improved, and both babies have gained steadily in weight.

In cases of this kind it is often necessary to supplement the breast feeding with cow's milk prepared according to our simple formalae.

Through the year we recorded the names and histories of 1,350 babies (or 43.6 percent of all births reported during the year), 551 white and 799 colored. Of this number 250 were dropped for various reasons; the services of the nurse were not desired in some cases, and not needed in others, while in several instances the babies were extremely ill when located and died before they could be seen again. A number moved to other districts and were lost sight of; a few did not come within our scope of work. This left 1,100 babies under supervision, in addition to 603 carried over from 1912, which number were dropped at different periods through 1913, when it was deemed no longer necessary to keep them under supervision.

The following table shows the classification according to feeding of the 1,100 supervised babies:

KIND OF FEEDING	WHITE		COLORED		TOTAL	
	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.
Breast	332	79.4	602	88.3	934	84.9
Artificial	59	14.1	43	6.3	102	9.3
Mixed	27	6.5	37	5.4	64	5.8
Total	418	....	682	....	1,100	....

A number of these babies when found by us were being fed on a cheap brand of condensed milk, on which they were not thriving. In a good many instances the mothers were induced to try feeding them on cow's milk, prepared according to the nurse's instruction. In most of these cases a marked improvement was soon noted. The following case shows what can be accomplished by care and proper feeding:

Baby ————, born in January, was taken under our supervision in April, at which time he weighed less than at birth. The department nurse made repeated visits to his mother, trying to persuade her to change his food from condensed to cow's milk. It was not until August that she met with success; at which time the baby weighed three pounds less than when first seen. Daily visits were then made to this home, to prepare the feeding and instruct the mother regarding both the preparation of the food and general care of the baby. This baby improved rapidly, and when last seen was in excellent condition.

Another baby, aged five months when located, was very small for its age, having been fed exclusively on condensed milk since three weeks old. This baby soon became ill with diarrhea, at which time the nurse advised a dose of oil and the discontinuance of all food until a physician could be called in. Later it was put on cow's milk, and minute instructions left with the mother. A marked improvement in its general condition soon became evident, and it is now well and gaining steadily in weight.

I am glad to state that our work among expectant mothers has increased materially over former years, and, as this is one of our most important branches, we consider that time thus spent is well spent. This work not only enables us to get in touch with babies from birth, but gives us the opportunity of instructing the mother regarding the care of herself before and during confinement, and the necessity of special attention being given to the baby's eyes at birth, thereby preventing in many cases ophthalmia neonatorium. We had under our care during the year 245 expectant mothers, 64 white and 181 colored; 169 of whom were confined before the close of the year, 44 white and 125 colored. Of this number of births not one case of blindness resulted. All cases of this nature were promptly reported to physicians, who kindly tendered us their services, and to whom we are much indebted for their co-operation and advice. In every instance these babies were closely watched by the department nurses, who saw that the physician's instructions were carried out. The following is in illustration:

A newly born baby was found by us which had ophthalmia neonatorum in a most exaggerated form, probably due to the carelessness and neglect of the midwife. After reporting this case to the physician, our nurse, in her endeavor to save the baby's sight, paid daily visits, giving the prescribed treatment. It is gratifying to state that her efforts met with success. I might relate several similar cases.

An instance in which our supervision proved beneficial to an expectant mother is illustrated by the following: An expectant mother was listed in the beginning of pregnancy, watched carefully by the nurse, and proper instructions given throughout this period. Previous to this she had been pregnant five times, and in no instance had she been able to carry the baby to full term. By carefully following the advice given her, this woman went safely to full term and gave birth to a healthy baby weighing eight pounds. It has since been doing well and steadily gaining in weight. This mother was deeply grateful for the help and advice given her, and was confident that but for this she would never have been able to carry her baby to full term.

The decrease in the death rate from diarrhea and enteritis in the past year seems to be an undeniable proof that the conclusions reached by you during the epidemic of infantile diarrhea in the fall of 1911 were correct as to this disease being highly infectious, and we have carefully followed, as in the prevous year, your instructions regarding the disinfection of diapers of all babies, especially those affected with this trouble. Further carrying out your instructions, we tried on all occasions to convince the mothers of these babies as to the danger of this disease being spread by flies, and the importance of doing all in their power to get rid of this menace to health.

Among the 1,100 supervised babies, 29 died from diarrhea and enteritis. Of those brought over from 1912 and kept under supervision, 7 deaths resulted from the above disease, making a total of 36 deaths from infantile diarrhea of the entire number of babies who were under the immediate care of the department nurses. It is gratifying to report that there were only 94 deaths from any cause among the 1,100 supervised babies, and 26 among the 603 babies brought over from 1912.

Every fatal case of infantile diarrhea in the city was investigated, and 112 such visits made. The number of deaths was, as usual, found to be least among breast-fed babies, but in all cases much depends on the attention given by those in charge, either mother or caretaker. We encounter a number of mothers and caretakers who seem absolutely incapable of comprehending instruction, and then it is that our work seems very uphill. On the other hand, it is sometimes just the reverse, and we meet mothers who are so bright and intelligent, and grasp our instructions so quickly and eagerly, that our work becomes a real pleasure.

A very discouraging phase of the situation, however, is when we find a baby being fed on condensed milk, and losing ground rapidly because the mother is too poor to buy cow's milk when prescribed. In such cases our advice and instructions are worthless as far as feeding is concerned. This is an obstacle which we have not yet been able to overcome, but hope that the time is not far distant when some provision may be made for such contingencies.

A very potent factor in the prevention of infant mortality is keeping a watchful eye on twins, because of the fact that they are often premature and congenitally weak, and in consequence need an unusual amount of surveillance. Then, too, in a great many instances, mothers have an insufficient amount of milk for both, and the babies are weak and improperly nourished. The mother turns to artificial feeding as a natural solution of the problem. Then it is that the nurse advises her to keep them on breast milk supplemented by artificial food, and instructs her regarding the preparation of the latter.

We had on our list in past year only 12 sets of twins, 24 babies. Of this number 4 died, 3 of which were premature and succumbed a few days after birth.

One set of twins (colored) merit special mention. These babies were six months old when located, and weighed only 6 and 7 1-2 pounds respectively. They were being fed on condensed milk, in addition to which the mother was giving them various other foods and even stimulants. At first she resented supervision; but, after persistent visits and a great deal of persuasion on the part of our nurse, she was induced to follow the instructions given her. It is gratifying to note that these babies when a year old were strong and healthy.

A great deal of time and attention were given illegitimate babies, who are naturally handicapped, many of them being given immediately after birth to caretakers, who are often both negligent and incompetent. In many such instances our supervision has proven beneficial.

Through the year 11,602 visits were made to babies under our care, and 1,020 "special" visits, such as responding to requests made by physicians to see babies outside of our regular line of work. A number of these special visits were requested by caretakers and mothers of babies who had been dropped, which was a source of gratification to us, as we felt that our efforts were being appreciated and our influence gaining ground. Special visits also included investigations of birth certificates not properly made out and securing other not previously sent into the department.

A number of babies outside of our regular districts were also listed and taken under supervision at the request of physicians, as it is our desire to get in touch with all babies whom we consider in any way handicapped.

Work which consumed a great deal of time was visiting and inspecting the maternity and foundling homes in the city. These were visited at regular intervals during the year, and records kept of all births, admissions and deaths. A great improvement is noted in the management of these institutions.

Much office work was required during the year, in order to systematize and keep in touch with the field work. This takes a great deal of time and thought. Then, too, the keeping of records and monthly reports of all district work, the inspection of birth certificates and death certificates of all infants under one year of age, are items of no small moment.

It givès me pleasure to add in conclusion that our nurses are becoming more and more welcomed in the homes in which they visit, and most of these mothers are very appreciative and grateful for the assistance which we have been able to render them.

Part II. Tuberculosis.

The general plan of the work for the prevention of the spread of tuberculosis during 1913 was the same as in 1912 after this work had been taken over by the Health Department Nurses. As in the previous year, our main efforts were directed toward instruction and education of patients attending the tuberculosis dispensaries, and all other suitable cases coming under our observation.

The amount of work done at the White Tuberculosis Dispensary was encouraging, judging from the number of new patients who entered and the number of old ones continuing their attendance. I am sorry to state, however, that the number of patients attending the Colored Tuberculosis Dispensary has fallen off somewhat in the past two months. This may probably be accounted for by the number of deaths which have occurred recently among those who attended the dispensary in the earlier part of the year, and also by the very small number of colored tuberculosis cases reported to the department during the latter part of the year, making it more difficult for the nurses to get in touch with new patients, and thus be afforded the opportunity of trying to persuade such cases to come to the dispensaries for treatment.

Another reason why it is difficult to work up a large dispensary attendance is due to the fact that many tuberculosis patients coming under our observation have private physicians, which debars the nurse from suggesting or urging their attendance at our dispensaries. No doubt there are many cases of tuberculosis in the city who would be only too glad to avail themselves of the opportunity of receiving treatment at the tuberculosis dispensaries if they knew of the existence of such places.

In addition to the class of patients mentioned at the beginning of this report, we have continued to locate in homes of babies visited a number of suspected tuberculosis cases, a large proportion of whom were sent to the Health Department Tuberculosis Dispensaries for examination.

The appended table gives a summary of the tuberculosis work done by the department nurses throughout the year ending December 31, 1913:

Number of visits to dispensary patients, white	479
Number of visits to dispensary patients, colored	520
Total number of visits to dispensary patients	999
Number of visits to non-dispensary patients	1,743
Total number of visits to tuberculosis patients	2,742

Number of visits to suspected tuberculosis cases located by nurses	116
Number of patients to whom supplies were carried by nurses	201
Number of tuberculosis cases sent to Pine Camp	54
Number of dispensary service hours given by nurses	731

For further information I refer you to the reports of chiefs of clinics of the Health Department Dispensaries.

In concluding this report I wish to say that, if we can gain the co-operation of the physicians of the city in the coming year, and awaken the community's conscience to the importance of the protection of health and the prevention of disease, there is no doubt that even more gratifying results will follow.

Respectfully submitted,
MARY JULIA MOORE, R. N.,
Chief Nurse.

REPORT OF INSPECTOR OF MILK AND FOOD SUPPLIES.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Va.

Sir:

I have the honor to submit herewith my report as Inspector of Milk and Food Supplies for the year ending December 31, 1913.

Visits for the year 1913		9,479
Visits to grocery stores	3,198	
Visits to dairies	1,325	
Visits to markets	650	
Visits to depots	140	
Visits to cold storage	220	
Visits to ice cream plants	300	
Visits to commission houses	2,050	
Visits to fish auctions	500	
Visits to abattoirs	146	
Visits to hotels, restaurants, cook shops, and drug stores, as to screening	950	
		9,479

Number of places under inspection about 1,300.

Permits suspended	1
Permits restored	1
Permits revoked	9
Permits restored	9
Permits granted (milk)	221

Amount paid to City Treasurer, as per Auditor's receipts		$442.00
Gallons of milk to churn		80,447
High bacteria	1,275	
High temperature	2,694	
Below standard	76,478	
		80,447
Gallons of milk condemned		1,191
Gallons of cream condemned		205
Samples to bacteriologist		1,622
Samples to chemist		2,592

Food Products Condemned.

	Lbs.	Value.
Vegetables	121,815	$2,117.25
Fish	16,648	407.09
Meats	1,661	184.48
Fruits	13,454	613.90

Game	5,435	483.20
Poultry	877	323.70
Groceries	1,175	52.50
Melons	1,300	16.00
Confectioneries	385	48.75
Eggs (dozens)	420	99.00
Oysters (gallons)	35	35.00
		$4,380.87

The increase in the number of gallons of milk ordered to the churn in 1913 in excess of that of 1912 was due, in a large measure, to the change which was made in the milk standard of the city, the change going into effect April 17, 1913.

The few permits of dairymen it was necessary to revoke during the past year, and the fact that it was not necessary to report any cases to the police court, make it plainly evident that dairymen holding permits from the Richmond Health Department for the sale of milk and cream in the city are showing every disposition to co-operate with the department in complying with its requirements in the production and handling of milk.

The department is to be congratulated on being able to obtain the services of dairy inspectors who are thorough in all their duties pertaining to the dairy industry.

The results obtained by the Assistant Food Inspector are largely due to his willingness to carry out instructions, and to suggestions made by him for the improvement of the work in which he is engaged

All animals slaughtered, the meat from which is to be sold on the Richmond market, should be inspected before and after killing.

The small amount of game, poultry and fish condemned during the year that had been shipped into Richmond shows plainly that shippers are observing every care in the handling of these articles before shipping them into the city. The greater portion of poultry condemned during the year showed upon investigation to be poultry from local cold storage plants.

The condition found in the vegetable, melon and fruit markets during the year showed a great improvement over the previous year.

Respectfully submitted,

E. M. NOBLE,
Food Inspector.

REPORT OF DAIRY INSPECTOR.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Va.

Sir:

I have the honor to present to you my report as Dairy Inspector for the year ending December 31, 1913.

Number of visits to dairy farms	1,034
Number of dairies visited and scored	162
Number of scores made	1,360

CLASS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
60 to 70	0	0	0	0	0	0	0	0	0	1	0	0
70 to 80	16	18	31	21	23	18	23	18	20	24	17	10
80 to 90	93	98	80	89	91	87	91	91	88	85	91	86
90 to 100	4	4	7	6	5	3	4	3	4	3	4	4
Total number of scores made during month	113	120	118	116	119	108	118	112	112	113	112	100
Number of dairies scored which continued to sell milk and cream during month.	113	119	117	116	118	106	118	112	112	110	111	100
Average score	82.9	83.	82.8	82.8	82.7	82.6	82.5	82.9	82.6	82.1	83.	83.2

Permits refused		4
Permits suspended		1
Permits suspended and restored		1
Permits revoked during year		9
Permits restored that were revoked during year		9
Average score of 9 places whose permits were revoked		74.1
Average score of 9 places whose permits revoked and restored		83.3
Diseased cows found and use of milk from same ordered discontinued (1 milk fever, 2 sore teats, 9 with cowpox, 2 giving stringy milk, 2 injured teats, 4 inflamed bags)		20
Gallons of milk condemned		1,191
Gallons of cream condemned		205
Gallons of milk ordered to the churn		80,447
High bacteria	1,275	
High temperature	2,694	
Below standard	76,478	
Samples of milk taken from bacteriological examination		1,622
New barns built during year		17
New milkhouses built during year		14
Sets of blue prints for barn construction furnished during year		49
New barns under construction		9
New milkhouses under construction		8
Number of new shippers to the Richmond market during the past year		15
Number of shippers that have discontinued shipping to Richmond during the past year		18

During the past year there has been shipped into Richmond a larger quantity of milk and cream than in any previous year, but there was no great surplus of either for any length of time, showing conclusively that the public is fast learning the food value of good, clean milk and cream, and is consuming more each year. Almost any milkman will tell you that he is supplying cream to a large number of his customers who a few years ago were content to do without it.

I cannot too strongly impress upon our dairymen the necessity of producing and shipping to Richmond only milk and cream of the highest quality. Every dairyman owes it to his fellow-shippers to send to this market only milk and cream that have been produced and handled under the best conditions possible. If every producer will do his part to see that only good, clean milk and cream are shipped to Richmond, there will be a large increase in the consumption of these products each year, and the future of the dairy business in this vicinity assured. Dairymen must realize that milk and cream are perishable products and require special care, lack of cleanliness in the production and handling, and lack of proper cooling being the two greatest abuses to which milk and cream are subjected. Dairymen producing market milk realize the necessity of prompt cooling of their product more than does the cream producer, as the latter in some cases fails to appreciate the advantage of cooling cream immediately after it is separated. The time is fast coming when all dairy products will be purchased on a quality basis.

Never in the history of the dairy business have milch cows been selling for such high prices. There are two causes mainly responsible for these prices—the increasing demand for dairy products, and the wholesale slaughtering of calves, the latter being the worst feature of the dairy industry. Numbers of dairymen will see their heifer calves from good cows by pure bred sires, and then go and purchase cows at a good price, even buying untried ones at public auction.

It seems to me that the whole solution of the high cost of dairy cows lies within the borders of our own State, and the sensible thing for dairymen to do is to stop purchasing high-priced cows from the other fellow, and raise their own. At least one calf should be raised every year for every four cows on the farm. I mean by that that if you are keeping a herd of twenty milch cows you should try to raise at least five heifer calves every year. Just as good dairy cattle can be raised in Virginia as in any other section of the country.

There is at present used in supplying the Richmond market with milk and cream the product from over 6,000 cows. On an average, about 20 per cent of cows, owing to different causes, will not breed. This would leave, taking 6,000 as a basis, 4,800 cows which, if properly bred, would drop a calf every year. About 50 percent of calves are heifer calves, so this would mean 2,400 heifer calves to be raised each year. If these calves were all by purebred sires of known producing families, and the calves raised instead of over 80 percent vealed, which is the case at present, there would be no shortage of good dairy cows, such as we are now facing.

The majority of dairymen will tell you, when asked about raising calves, that it costs so much to raise them! still the same men will pay from $125 to $175 for an untried grade cow. There is no doubt that it costs to raise calves, with everything in the feed line at such high prices, but if one expects to continue in the dairy business it is the only solution of the problem of obtaining cows, for the scarcity of dairy cattle is not confined to any one section of the country, but to the whole United States.

There is a wide difference of opinion regarding the proper method of raising calves, but I think most authorities agree that it is necessary that the calf should have whole milk for at least two weeks after it is born; then if a change from whole to skimmed milk is desired, this change should be made gradually, substituting a small amount of skimmed milk for a like amount of whole milk in the daily ration, taking at least seven days to make the complete change from one to the other. Great care should be taken to see that all milk, whether it be whole or skimmed, is hot and sweet when fed, and all pails thoroughly cleaned every time they are used.

The common disease of calves, scours or indigestion, can generally be traced to dirty stables, the use of dirty pails, or the feeding of cold or sour milk. Stalls in which cows have calves should be cleaned and disinfected after each calf is born.

Owing to the efforts of the Richmond Health Department and the co-operation of the Southern Express Company, cream is now being properly protected from the heat of the sun at Moseley Junction by being placed in a shed after its arrival at this place on the Tidewater and Western Railroad, and is kept in the shed until a few minutes before the arrival of the train on the Southern Railway, which carries it to Richmond. The former manner of handling cream at Moseley Junction, before the matter was taken up with the officials of the Southern Express Company by the dairy inspector of the Richmond Health Department, was to transfer the cans of cream from the Tidewater and Western Railroad to an open truck, where they were allowed to stand without any protection until the arrival of the train which carried the cream to Richmond. In some cases, owing to the lateness of the connection at Moseley Junction, it meant that the cream was exposed for hours to the hot rays of the sun during the summer, and resulted in much sour cream.

Great difficulty seems to be encountered by shippers in some localities in getting their cans properly returned, the trouble either being that the customer is holding the cans or the railroad company losing them. This trouble can be corrected if the customer will take a receipt for all cans returned and the local agent at the shipping point take a receipt for every can taken from the depot. Then if any are missing they can be traced, and, if lost by the railroad, a claim made for them.

Every effort should be made to develop the dairy industry of this State. We do not produce as much dairy products as we consume, and with all our natural advantages we should be capable of producing not only enough dairy products for our own demands, but also a surplus to be shipped to other states. Aside from the milk and cream supplied to cities for direct consumption, dairying is not at present being carried on to any great extent, for we are importing large quantities of butter and practically all our cheese and condensed milk from other states to supply the demand of our people for these products. When we take into consideration all the cheap lands available in Virginia, and the fact that dairying thrives in Europe on land worth as high as $500 per acre, it looks as though we are neglecting a grand opportunity to make Virginia one of the greatest dairy states in the Union.

The large quantities of raw cream used by ice cream manufacturers has created a big demand for raw cream, especially during the summer months. The growth of this industry during the past ten years has far exceeded all expectations, and its wonderful development is shown in the large modern, sanitary plants, one or more of which may be found in nearly all cities, devoted exclusively to the manufacturing of ice cream. The ice cream manufacturer must receive a good, clean raw product, so he, in turn, can turn out a clean finished product.

In the production of first-class cream, absolute cleanliness must be observed in every step. The cow's flanks must be brushed clean, the cow's udders and teats washed and wiped with a clean cloth, the milker's hands washed and wiped dry, the milking utensils thoroughly washed and scalded after each milking, the milk strained through a clean strainer cloth, and promptly cooled after being separated.

Dairymen should try and reduce the number of flies on their farms, especially during the summer. It has been scientifically demonstrated that the fly plays an important role in the transmission of intestinal diseases, such as typhoid fever and infantile diarrhea. Besides the danger from the transmission of disease by the fly, the continual fighting on the part of the cow of this insect calls for a certain amount of energy, which is sure to cut down the milk yield, and I do not know of a more annoying thing for the person milking than to have the cow continually fighting flies while she is being milked.

The species of fly found around the cow barn and stable are known as stable flies. They very closely resemble the house fly, but are an entirely different species. A few stable flies occasionally find their way to the house. The chief breeding places of flies are in excrement and other filth. The great factor in reducing the number of flies is to do away, as far as possible, with their breeding places, which resolves itself into a campaign for cleanliness.

There has been some complaint from dairymen who do not think they are being treated exactly fairly in regard to the weight of cream, also in the testing of same. The opinion seems to prevail that a gallon of cream will weigh the same, no matter what its fat content may be. This is a mistake, for the richer cream is, the less it will weigh. The amount of air in cream will also have an effect upon its weight.

The proper testing of cream takes a little care to see that not only an accurate sample is taken, but also the proper amount. The general practice on the farms of measuring 18 c. c. for tests I do not think very accurate. The weighing of 18 grams and using this quantity for making the test gives much more satisfactory results. If dairymen who are at present measuring their cream for testing would provide themselves with a small scales (there is one on the market made for this purpose) and weigh the cream they desire to test instead of measuring it, I do not think there would be such a variance in the tests made by them and the ones made in the city.

The educational work being done by the Richmond Health Department along dairy as well as other lines is being appreciated more as it is becoming better known. The members of the Dairy Division of this department are always ready to furnish information along dairy lines to any one desiring same. During the past year 49 sets of blue prints showing detailed construction and measurements of modern, up-to-date dairy barns were furnished by this department free of charge to persons applying for same.

A very important item in the production of clean milk is an abundance of hot water for washing the utensils used in the handling of the milk. It is impossible to clean utensils properly where only cold water is available. The small steam boiler is being used on a number of farms as a means of securing a supply of hot water. It also has the additional advantage of furnishing steam to sterilize utensils, and, where cream is sold, can be used to run a turbine steam separator.

Every precaution should be taken in the handling of bulls, and when they show signs of becoming vicious it is always a good plan to dispose of them—not to some neighbor, but by killing. One of our dairymen died from the result of injuries received by being attacked by a bull, and two others were badly injured during the past year.

That the average herd of dairy cows will not give both quantity and quality of milk was well established during the past year by the number of dairymen, in nearly every case owners of herds of grade Holstein cows, whose attention had to be called to the fact that milk was being sent to the city by them which, upon analysis, showed that it did not meet the demands of the city ordinance, which requires all milk to contain 3 25 percent fats, 8.50 per cent. solids not fats, with a total of 12 percent solids. Where milk is low in fats, the question often arises if it is not possible by some system of feeding to increase the percentage of fat in a cow's milk. A cow kept under normal condition, properly fed with sufficient food to keep her body in good physical condition and enough to produce the amount of milk she is capable of producing, can by no change of feeds be made to increase the percentage of fat in her milk. It is possible to put a cow in what might be termed an abnormal condition by heavy feeding previous to calving and then light feeding just after calving. Her milk under these conditions will in some cases test a little higher for a short time after she drops her calf. What I would consider increasing the percent of fat in a cow's milk would be to take any cow whose milk tested 3 percent fat, and by some system of feeding make this cow's milk test 4 percent for her lactation period, or to take the Holstein cow with her large flow of milk and by feeding have her produce milk of the quality produced by the Jersey and Guernsey.

During the past year 15 herds, the product from which is being sold on the Richmond market, were officially tested for tuberculosis under the direction of and by a veterinarian from the Bureau of Animal Industry, Washington, D. C. All of these herds had been previously tested, with the exception of Nos. 4, 8, 9, 14 and 15. The results of these tests were as follows:

NUMBER OF HERD	NUMBER OF COWS TESTED	NUMBER OF REACTORS
1	28	0
2	43	0
3	57	0
4	32	0
5	25	2
6	32	0
7	11	0
8	27	1
9	18	0
10	32	0
11	81	0
12	61	1
13	45	0
14	77	1
15	71	22

In addition to the above, a large number of dairymen have had the tuberculin test applied to their herds during the past twelve months. As these tests were made by local veterinarians, no official records showing the results of same are on file in this office, but as far as can be learned the tests have proved very satisfactory in all cases except one, this herd showing a large number of diseased animals. The conditions under which this herd had been kept were, I think, in a large measure responsible for the number of reactors found. Cows, to be healthy, must be kept under the proper conditions—the barn in which they are stabled must be comfortable, well lighted, ventilated, and so constructed as to allow the maximum amount of sunshine to penetrate the interior of the barn.

Srtingy or ropy milk can generally be avoided where absolute cleanliness is observed, as this trouble is usually caused by the presence of a species of bacteria which in their development produce a milk which, when poured from one vessel to another, has the appearance of being stringy. The remedy for this condition of milk is a thorough cleaning of the barn, milk-house, and utensils.

Owners of cattle are very often worried by a sudden attack of lameness in their cattle, this lameness in most cases being caused by either rheumatism or foul foot. If by the latter, an examination of the hoofs of the cattle between the toes or claws will show small boils or ulcers. The starting of this trouble is generally a small scratch which has become infected by the cow standing in a filthy place or walking through a dirty yard. As a rule, very little trouble is caused by foul foot when the weather is dry—it is only when the ground gets wet that the skin between the claws becomes tender and more susceptible to injury. As soon as the lameness is noticed in cattle and the cause found to be in the hoof from trouble as above described the diseased hoof between the claws should be thoroughly washed with soap and water and a hot linseed poultice applied every night for three or four nights. After taking the poultice off in the morning and before putting it on at night, the infected place should be bathed in a mild solution of carbolic acid. Be sure and keep the animal standing in a dry place.

The producer's side of the dairy business is thoroughly understood by the Richmond Health Department, and it well knows that, with few exceptions, the dairymen producing milk and cream for this market are always willing to co-operate with us to maintain the high standard the Richmond milk supply has attained, for the confidence of the public in knowing that the milk and cream they are using is being produced under ideal conditions will do more to increase the consumption of these products than anything else.

Respectfully submitted,

T. J. STRAUCH,
Dairy Inspector.

REPORT OF CITY CHEMIST.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Va.

Sir:

I herewith submit a report of the chemical examinations made for the Health Department during the year 1913.

	FOR CITY	AT CITIZEN'S REQUEST
Cream	2	1
Butter	1	0
Bread	1	0
Milk	2,547	139
Milk condensed	1	0
Well water	10	0
Total	2,562	140
Total samples examined		2,702

The milk standards were changed the middle of April.

Table showing the averages of city's milk samples examined during the year.

SAMPLES EXAMINED BEFORE APRIL 15, 1913

	Number	Fats	Solids not fat	Total Solids	Below Standard	
					Number	Per Cent.
All samples	652	3.39	9.17	12.56	147	22.54
Below standard samples	147	3.09	8.82	11.91		
Samples after April 15						
All samples	1,895	3.57	9.01	12.58	531	28.02
Below standard samples	531	3.12	8.81	11.93		

JAS. M. WHITFIELD,
City Chemist.

REPORT OF PLUMBING INSPECTOR.

Dr. E. C. Levy,

Chief Health Officer, Richmond, Va.

Sir:

I have the honor to submit herewith my annual report as Plumbing Inspector for the year ending December 31, 1913.

The past year has been another one of unusual activity in building operations, and the number of inspections made exceeds that of any previous year. Plumbing inspections and tests were made in 678 new buildings, against 666 during 1912. This work included two large hotels, one twelve-story apartment house, two public schools, the Chamber of Commerce building, and other large structures.

During the year there were 2,305 inspections made of additions and alterations in old work, most of which was ordered under the city ordinances by this department. There has been a decided improvement made in sanitary conditions in these old houses during the year by having modern plumbing fixtures installed and other work done.

In many instances the sanitary arrangements in these houses were found to be in a most deplorable condition.

While it may be true that the expense of making these improvements has been a little hard on many of the owners at first, later on they have appreciated the great benefits and conveniences derived from good plumbing, and I must say it is very gratifying to note that the general public is becoming much better educated in modern plumbing appliances and other sanitary matters than in years past.

During the past year there have been numerous complaints, especially from the old business section of the city, of defective sewers leaking into the cellars of houses, and in some cases illuminating gas from leaky mains had found its way into these buildings through the house drains. This has not only menaced the lives of the occupants, but has caused great danger of gas explosions. This special line of work consumed a great deal of my time in making experiments for locating the cause of these leaks and having the nuisances abated.

I would suggest that during our present year amendments be made in our plumbing ordinances, regarding the construction of plumbing work in tall buildings. Experience has shown, and it has been practically demonstrated by tests and other experiments made in this and many other cities, that relief vent pipes of a sufficient size should be installed on all soil pipe lines in tall buildings, to overcome the effect of air resistance and back pressure, which under certain conditions is liable to occur in this character of work.

When our present plumbing ordinances were adopted, in 1896, no one considered that there would be such a rapid growth of our city. Consequently, there was no special provision made for the installation of plumbing systems in the tall modern office buildings, apartment houses, and hotels of such a great height as have been erected here. It is, therefore, very important that some changes should be made in our ordinances to meet these conditions, and produce the very best results.

I desire again to call your attention to the great importance of the passage of an ordinance, or health regulation, requiring property owners to install a sufficient number of water closets on premises according to the number of persons living there. In many cases houses have separate apartments subletted with but one water closet on the premises, and this is being used by a large number of persons of both sexes. I trust, therefore, that you will give this very important matter due consideration, and that something may be done to relieve these insanitary conditions.

Owing to the rapid progress and growth of our city, we will have to make such ordinance amendments to keep abreast of the times and meet the demands of an increasing population.

The work of the office of Plumbing Inspector is steadily increasing, requiring considerable amount of office work as well as outside inspections. my assistant, Mr. Boaz, has been very prompt and efficient in making inspections, and, considering the large amount of work under construction here during the summer months, it was with some difficulty that we were able to meet the demands for inspections and prevent delays. During our busy season. I highly appreciated the assistance rendered by Sanitary Officer Thomas W. Mitchell in making plumbing inspections in South Richmond.

During the year there were 31 cases tried in police court, and $97 in fines imposed for violation of plumbing ordinances.

A tabular report of the work done during 1913 follows:

MONTH	Inspections made	Plumbers' Permits issued	New buildings inspected	Additions and alterations inspected	Complaints investigated	Notices served on owners and agents	Police Court cases tried
January	224	246	55	146	23	23	1
February	264	193	44	195	25	22	..
March	288	200	32	233	23	23	1
April	236	245	49	157	30	30	1
May	367	206	97	240	30	30	2
June	245	212	68	150	27	27	3
July	246	194	61	150	35	35	7
August	299	171	75	200	24	24	..
September	283	163	77	176	30	30	5
October	309	187	27	247	35	35	7
November	241	269	49	158	34	34	3
December	325	218	44	253	28	28	1
Total	3,327	2,504	678	2,305	344	341	31

Fines imposed, $97.00.

Respectfully submitted,

THOS. M. LANDERS,
Plumbing Inspector.

REPORT OF THE PLUMBERS' EXAMINING BOARD.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Va.

Sir:

I have the honor to submit herewith my report as Secretary of the Plumbers' Examining Board, for the year ending December 31, 1913.

Meetings held during the year	18
Journeymen plumbers examined	52
Number examined and found unqualified	4
Number examined and licensed	48
Number of licenses renewed	135

Respectfully submitted,

THOS. M. LANDERS,

Secretary of the Plumbers' Examining Board.

FUMIGATOR'S REPORT.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Va.

Sir:

I have the honor to submit to you my report for the year ending December 31, 1913.

MONTH	SCARLET FEVER		TYPHOID FEVER		DIPHTHERIA		TUBERCULOSIS		OTHER CAUSES		TOTAL	
	Houses	Rooms	Houses	Rooms	Houses	Rooms	Houses	Rooms	Houses	Rooms	Houses	Rooms
January	2	8	40	114	16	34	46	188	7	24	111	368
February	18	60	2	12	12	30	38	100	11	24	81	226
March	13	76	1	2	8	24	62	244	13	52	97	398
April	6	16	0	0	5	10	62	298	17	62	90	386
May	16	66	0	0	1	2	53	332	11	64	81	464
June	6	12	3	6	4	14	49	248	15	50	77	330
July	11	42	9	26	3	8	64	428	11	54	98	558
August	8	58	7	30	6	18	57	452	29	270	107	824
September	8	22	15	44	20	48	72	460	26	214	141	788
October	15	36	3	14	30	66	49	196	12	30	109	342
November	43	112	3	8	33	90	37	146	14	40	130	396
December	42	120	8	16	14	40	40	158	20	32	124	366
Total	188	624	91	272	152	384	629	3,250	186	916	1,246	5,446

Respectfully submitted,

J. F. WALLER,
Fumigator.

REPORT OF WHITE TUBERCULOSIS DISPENSARY.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Va.

Sir:

I have the honor to submit herewith my report for the White Tuberculosis Dispensary of this city for the year ending December 31, 1913.

In forwarding this report, there are several features of the year's work worthy of attention. The number of patients coming to the dispensary for diagnosis on their own initiative is greater than ever before, showing the appreciation of the public in general for this opportunity, and also their recognition of the need of an early diagnosis if a cure is to be hoped for. A greater willingness and even desire is manifested by those having tuberculosis of taking advantage of the benefits of Pine Camp. Every year the decrease in the number of advanced cases continuing attendance is explained on inquiry to be due to the fact that many of these immediately leave the city to live in the country, or go to Pine Camp.

Results in cures for those moderately advanced is almost impossible by dispensary treatment, as they have not the means to live under conditions prescribed.

The greatest results from dispensary treatment are for the very early cases who can continue their work under supervision, which is too expensive to get outside; and the palliative treatment of the advanced cases.

The community is greatly benefited by the prophylactic measures required of these cases, and generally willingly followed by them.

The faith of the public is shown by the number who come for diagnosis and are not tubercular, and are directed how to get the required treatment at other dispensaries.

I wish to express my appresiation of the services of Dr. G. A. Ezekiel, who is associated with me at this dispensary, and also of the faithful and efficient co-operation of the nurses in attendance.

I still believe that separation of the tuberculosis work under special tuberculosis nurses would be beneficial to this work.

Respectfully submitted,

GILES B. COOK, M. D.,
Chief of Clinic.

Report of Franklin-St. (White) Tuberculosis Dispensary, for the Year Ending December 31, 1913.

MONTH	SEX		AGE			STAGE OF TREATM'T			DIAGNOSIS			SPUTUM REPORT			WEIGHT			NO. OF VISITS		CONDITION					NO LONGER UNDER TREATMENT					
																												Referred		
1913	Male	Female	Under 20 years	20-40 years	Over 40 years	New patient	Old patient	Discharged	Tubercular	Non-tubercular	Undetermined	Positive	Negative	Not examined	Increased	Stationary	Diminished	To dispensary	By nurse	Disease arrested	Improved	Unimproved	Progressive	Died	No case	Left city	Lost sight of	To other dispensaries	To private physicians	To sanatorium
January	13	19	7	14	11	5	27	...	22	4	6	2	19	11	18	9	5	68	54	...	17	14	1	...	...	...	...	...	...	1
February	5	14	5	10	14	4	25	...	21	6	2	3	18	8	12	11	6	47	59	...	16	11	2	...	...	...	...	...	...	2
March	14	12	6	9	11	3	23	...	19	5	2	3	15	8	11	10	4	49	55	...	10	14	2	...	...	...	...	...	...	..
April	14	23	3	22	12	10	27	...	27	7	3	4	19	14	8	22	7	80	41	...	13	20	4	...	...	...	...	...	...	..
May	18	20	8	22	8	7	31	...	33	2	3	3	21	14	8	22	8	70	44	4	11	23	4	...	...	...	...	...	1	1
June	17	25	11	21	10	11	31	...	32	7	3	3	21	18	4	29	9	70	33	...	15	25	2	...	...	...	...	...	...	..
July	20	22	9	20	13	10	32	...	28	4	10	1	21	20	4	27	11	72	29	...	14	28	...	...	...	...	...	...	...	2
August	16	17	8	15	10	7	26	...	23	5	5	2	21	10	12	17	4	65	26	...	17	14	2	...	...	...	...	...	...	..
September	11	22	9	16	8	4	29	...	20	8	5	2	16	15	13	15	4	60	41	1	20	10	2	...	...	...	...	...	...	..
October	14	25	10	22	7	11	28	...	28	7	4	4	16	19	15	19	5	73	41	...	19	18	2	...	...	...	...	...	...	2
November	12	21	6	19	8	9	24	...	24	3	6	1	16	16	15	16	2	64	34	...	19	13	1	...	...	...	...	...	...	..
December	14	25	12	14	13	10	29	...	29	6	4	2	23	14	17	17	5	63	24	11	9	18	1	...	...	...	...	...	...	..
Total	178	245	94	204	125	91	332	...	304	64	53	30	226	167	137	214	70	781	481	16	180	208	23	...	...	...	...	...	1	8

Respectfully submitted,

GILES B. COOK, M. D.,
Chief of Clinic.

REPORT OF COLORED TUBERCULOSIS DISPENSARY

Dr. E. C. Levy,
Chief Health Officer, Richmond, Va.

Sir:

I have the honor to submit herewith my annual report of the work done at the Colored Tuberculosis Dispensary, and by the nurses of the Richmond Health Department during the year 1913.

There were 687 visits to the Dispensary, and 520 visits were made by nurses to patients in their homes. Of the patients attending in 1912, 72 returned in 1913, and 106 new patients presented themselves for treatment. making a total of 178 patients for the year. The greatest number treated at the Dispensary in one month was 44, inJune, and the smallest number was 20, in December.

The 178 patients who attended may be classified as follows:

Sex: 60 males, 118 females.

Age. 53 under 20 years; 99, 20 to 40 years, and 26, over 40 years of age.

Diagnosis: 93 tubercular, 23 non-tubercular, 62 undetermined.

Referred: 15 to other dispensaries, 3 to City Hospital or sanatoria.

Of the 93 tubercular patients, 55 attended fewer than four times, and hence are not classified below as to condition after treatment. Many of these came only once. as did also many of those whose diagnosis was undetermined.

The condition after treatment of the 38 tubercular patients who attended four or more times was as follows: 12 improved. 17 unimproved, 6 progressive, 3 died.

Two cases "arrested" do not appear in the above classified list. for the reason that they attended the Dispensary fewer than four times during the year. Others who discontinued their visits to the Dispensary after making substantial, satisfactory improvement no doubt became "arrested" cases, but ceased to be dispensary patients, and therefore went from under our observation. We invariably drop from the roll at the end of the month all patients who do not visit the Dispensary at least once during the month, bed patients and others too ill to attend excepted. The nurses' visits to patients dropped from the roll are not recorded at the Dispensary. so they receive no credit for such visits. a great many of which are made during the year. Six patients who died attended the Dispensary fewer than four times, and are therefore not included in the above list.

While the total number of patients attending the Dispensary this year is 30 less than that of last year. we note that a larger number of old patients (i. e.. patients of the previous year) returned for treatment this year than last. Last year 47.5 percent. this year 53.5 percent, of patients presenting themselves proved to be tubercular. We are gratified that the tubercular individuals are seeking aid from the dispensaries. It is this class that we particularly wish to reach. Last year we reported the diagnosis undetermined in 37.5 percent, this year in 33.5 percent of cases presenting themselves.

The class of patients with which we deal at this dispensary needs to be encouraged to attend. It is not sufficient to tell them that they have "lung trouble" and must come to the dispensary for treatment. The nurses, both of the Health Department and of the Instructive Visiting Nurse Association, have just here a field of usefulness many times larger than all others combined in inducing persons suspected of having pulmonary involvement to come to the dispensaries for treatment and instruction before their condition becomes hopeless. A kind word, a cordial invitation, any manifestation of interest in their welfare—which is in a very distinct sense to the welfare of our whole community—would often yield abundant returns for the effort it required. It is by no means the incipient cases only that we wish at the dispensaries. They may be an unconscious source of infection to others, but the advanced and moderately advanced cases we are particularly anxious to have come under the influence of the dispensaries, where the physicians can impress upon them the proper observance of instructions in their daily life and contact with us, so that through the teaching function of the dispensary the menace they present to the general health of the community may be reduced to a minimum. Success in this line of endeavor comes not from perfunctory calls and professional visits but rather when we throw our hearts into the work of helping afflicted humanity and civic pride prompts us to greater efforts in protecting the uninfected. Results in this department of dispensary work can not be measured by cases "arrested" or even by the number of cases "improved." We can not hope for either result in many cases applying for treatment but the instruction of patients by the physicians and nurses at the dispensary, and by the nurses in their daily visits to the homes of the patients, is of inestimable value. The educational feature of the dispensary conducted systematically and persistently by a trained corps of physicians and nurses is perhaps the most important function of the tuberculosis dispensary, and constitutes the only definitely organized effort to reduce the spread of the great "white plague" among that class of individuals whose carelessness is the result largely of ignorance.

I wish to thank my associates, Drs. R. S. Bosher, Jr., J. H. Smith, J. H. Preston, and W. B. Porter, for their valuable gratuitous services, which have made the dispensary work possible and very agreeable. I commend our dispensary nurses of the Richmond Health Deparement for their faithful and efficient services.

The willingness of the Chief Health Officer to provide for the dispensary every facility which the appropriation permits for the treatment of patients is greatly appreciated.

The appended table of summaries gives a detailed account of the dispensary work month by month.

Respectfully submitted,

P. D. LIPSCOMB, M. D.,
Chief Clinic.

Report of Colored Tuberculosis Dispensary, for the Year Ending 1913.

MONTH	SEX		AGE			STAGE OF TREATM'T			DIAGNOSIS			SPUTUM REPORT			WEIGHT			No. OF VISITS		CONDITION					NO LONGER UNDER TREATMEET					
																												Referred		
1913	Male	Female	Under 20 years	20-40 years	Over 40 years	New patient	Old patient	Discharged	Tubercular	Non-tubercular	Undetermined	Positive	Negative	Not examined	Increased	Stationary	Diminished	To dispensary	By nurse	Disease arrested	Improved	Unimproved	Progressive	Died	No case	Left city	Lost sight of	To other dispensar's	To private physc'an	To sanitorium
January	18	37	18	26	11	13	42	15	30	10	15	17	22	16	12	20	4	83	76	0	12	24	6	1	3	0	0	3	0	1
February	17	35	18	26	8	8	44	24	27	7	18	14	23	15	1	13	3	37	42	1	7	15	0	2	1	2	0	1	0	0
March	13	28	13	21	7	9	32	9	24	7	10	11	19	11	12	13	3	54	53	1	6	23	2	0	1	1	0	3	0	0
April	14	33	15	25	7	11	36	14	32	6	9	17	21	9	8	15	9	65	49	0	11	24	1	1	1	0	0	1	0	0
May	16	23	8	25	6	14	25	2	25	4	10	13	11	15	3	12	7	64	45	0	9	13	4	0	0	0	0	2	0	0
June	15	29	12	24	8	15	29	5	29	6	9	12	21	11	10	7	14	93	53	0	17	16	6	0	6	0	0	4	0	0
July	14	27	11	22	8	11	30	3	29	5	7	13	21	7	8	8	14	66	45	0	17	17	7	0	4	0	0	1	0	0
August	13	22	8	22	4	7	28	1	29	1	5	12	18	5	5	13	9	54	41	0	11	16	5	2	1	0	0	0	0	0
September	14	21	8	22	5	5	30	3	27	0	8	10	19	6	10	11	7	55	35	0	15	12	5	3	0	0	0	0	0	0
October	7	16	3	14	6	6	20	1	16	2	5	5	14	4	7	10	4	41	34	0	6	14	3	0	1	0	0	0	0	0
November	6	17	4	14	5	5	18	3	17	2	4	5	14	4	9	3	3	35	29	0	5	11	1	0	1	0	0	0	0	2
December	6	14	6	10	4	5	15	0	13	1	6	5	11	3	9	3	2	31	18	0	10	6	0	0	0	0	0	0	0	0
Total	...	...	...	...	...	106	...	...	...	...	...	...	...	...	...	...	...	678	520	2	...	...	...	9	19	3	...	15	...	3

Respectfully submitted,

P. D. LIPSCOMB, M. D.,
Chief Clinic.

REPORT OF DISTRICT PHYSICIAN, FIFTH DISTRICT.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Va.

Sir:

I have the honor to submit to you my report as District Physician of the Fifth District for the year ending December 31, 1913.

Number of visits, white	395	
Number of visits, colored	2,566	
Total number of visits		2,961
Number of white patients	342	
Number of colored patients	1,771	
Total number of patients		2,113
Number of patients, male	796	
Number of patients, female	1,317	
Total number of patients		2,113
Number of deaths, white	0	
Number of deaths, colored	16	
Total number of deaths		16
Number of patients sent to the City Home	39	
On hand December 31, 1913	9	

Respectfully submitted,

L. D. BATKINS,
District Physician.

REPORT OF DISTRICT PHYSICIAN, FOURTH DISTRICT.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Va.

Sir:

I have the honor to submit to you my report as District Physician of the Fourth District for the year ending December 31, 1913.

Number of visits, white	606	
Number of visits, colored	1,505	
Total number of visits		2,111
Number of white patients	165	
Number of colored patients	467	
Total number of patients		632
Number of patients, male	308	
Number of patients, female	324	
Total number of patients		632
Number of deaths, white	0	
Number of deaths, colored	3	
Total number of deaths		3
Number of patients sent to the City Home	75	
On hand December 31, 1913	8	

Respectfully submitted,

T. E. STRATTON,
District Physician.

REPORT OF DISTRICT PHYSICIAN, SEVENTH DISTRICT.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Va.

Sir:

I have the honor to submit to you my report as District Physician of the Seventh District for the year ending December 31, 1913.

Number of visits, white	1,850	
Number of visits, colored	607	
Total number of visits		2,457
Number of white patients	654	
Number of colored patients	365	
Total number of patients		1,019
Number of patients, male	314	
Number of patients, female	705	
Total number of patients		1,019
Number of deaths, white	9	
Number of deaths, colored	0	
Total number of deaths		9
Number of patients sent to the City Home	18	
On hand December 31, 1913	8	

Respectfully submitted,

E. T. RUCKER (Per M. F. P.),
District Physician.

REPORT OF THE CHIEF SANITARY OFFICER.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Va.

Sir:

I have the honor herewith to submit to you my fourth annual report as Chief Sanitary Officer. This report embraces the reports of the five sanitary officers. Considering our work as a whole, I feel certain that we are continually going forward in every line of the Sanitary Department. Especially is this true of house-to-house inspection, which we had longed and hoped for ever since my first connection with this office. My report does not, and cannot, show the actual amount of work involvel in locating and correcting numerous nuisances that in all likelihood would never have been brought to the attention of this department except through this method of inspection. It is to be hoped that we can continue house-to-house inspection hereafter, and I trust that in case of the anticipated annexation of territory an additional number of inspectors will be added to our force, so that this work will not be interfered with.

In spite of the fact that it became necessary to report several of our large stable owners to the police court in the month of April for violation of stable rules and regulations adopted by the Health Department, and notwithstanding the fact that the courts up to this time have not decided this question, there have been laid nearly 100 tight floors in stables, to take the place of insanitary dirt and wooden floors, which offer breeding places for flies.

Sewer extensions were not as numerous in the year 1913 as heretofore, but, wherever sewers were extended in streets which offered sewer connections to property that had dry closets, orders were immediately issued from this office requiring said sewer connections to be made. My report shows that 363 connections were made, taking the place of dry closets. This number has been offset by having 12 new buildings erected where sewers are not available, giving us a net gain, however, of 351. This is by far the lowest number of dry closets destroyed in any year since the reorganization of the Health Department. While I have been somewhat disappointed in not seeing more sewer work done, we should feel gratified that a city the size of Richmond should have no more than 1,200 dry closets. Even though sewer connections were not provided for in these 1,200 cases, I personally had them all repaired or built new to conform to the rules of the Richmond Health Department governing dry closets. Owing to having a fewer number of dry closets, this class of work was by far the best we have ever had, and I can say that we have reached our climax in the sanitary construction and control of dry closets.

In closing this report, justice demands that I should call your attention to the work of your five inspectors, to whose hearty co-operation was due the success which attended our house-to-house inspection. Two of them have undertaken to do the work heretofore done by four inspectors, and they have fully measured up to my expectations.

There is much more that could be said in connection with this report, but which I do not deem necessary. The comparison of this report with that of former years will show that your inspectors are continually advancing along practical and thoughtful lines, and you can expect them to accomplish even greater things in the future.

I wish to thank our Mr. S. A. Hall for the use of his barrels, tubs and stable in connection with our fly work of last summer. Mr. Hall went to considerable expense to provide the necessary equipment to enable us to conduct a line of experiments for the purpose of lessening the number of flies.

My tabular reports follows:

Summons served	245
Cases in court	298
Old closets ordered repaired	2,212
New closets put in	964
Dry closets inspected	3,198
Dry closets ordered cleaned and destroyed	552
Closet boxes ordered in and houses repaired	1,712
Old stench traps repaired	607
New stench traps ordered in	128
Old hydrants ordered repaired	641
New dry closets ordered	96
Sewer connections ordered	363
Sewers ordered repaired and cleaned	1,072
Water connections ordered	147
Rain conductors, gutters and roofs ordered repaired	547
Kitchen sinks ordered repaired	430
Visits for plumbing Inspector	568
Water pipes ordered repaired	607
Yards inspected	11,984
Yards ordered cleaned	5,326
Vacant lots inspected and ordered cleaned	237
Areas inspected—ordered cleaned and drained	89
Cellars ordered cleaned and drained	141
Outhouses inspected and ordered cleaned	334
Dead animals ordered to be removed	316
Alleys inspected	504
Alleys ordered cleaned	391
Old wells inspected, ordered cleaned and repaired	135
Old wells condemned and ordered filled	358
Manure piles ordered removed and barrels ordered	651
No cause for complaint	554
Contagious disease cards put up	4,167
Original houses visited	19,669
Premises inspected and revisited	13.243
Agents, owners and plumbers visited	5,679

Miscellaneous visits and orders	1,217
City water ordered on premises	1,388
Culture stations visited	318
Birth certificates investigated	39
Catch basins ordered cleaned	220
Stables inspected	1,328
Stables ordered repaired	537
Total number of visits	44,759

In addition to my work as Chief Sanitary Officer, the following detail work was also done by me during 1913:

Summons served	46
Cases in court	31
Old closets ordered repaired	334
New closets put in	187
Dry closets inspected	2,139
Dry closets ordered cleaned and destroyed	70
Closet boxes ordered in and houses repaired	1,315
Old stench traps repaired	24
New stench traps ordered in	10
Old hydrants ordered repaired	39
New dry closets ordered	29
Sewer connections ordered	64
Sewers ordered repaired and cleaned	138
Water connections ordered	3
Rain conductors, gutters and roofs ordered repaired	17
Kitchen sinks ordered repaired	61
Visits for Plumbing Inspector	22
Water pipes ordered repaired	16
Yards inspected	1,808
Yards ordered cleaned	939
Vacant lots inspected and ordered cleaned	32
Areas inspected—ordered cleaned and drained	9
Cellars ordered cleaned and drained	18
Outhouses inspected and ordered cleaned	11
Dead animals ordered to be removed	8
Alleys inspected	30
Alleys ordered cleaned	13
Old wells inspected, ordered cleaned and repaired	1
Old wells condemned and ordered filled	30
Manure piles ordered removed and barrels ordered	303
No cause for complaint	59
Contagious disease cards put up	213
Original houses visited	3,160
Premises inspected and revisited	1,520